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NAVAL POSTGRADUATE SCHOOL MONTEREY, CALIFORNIA



THESIS

**CAN IRAQ BE DETERRED FROM USING
WEAPONS OF MASS DESTRUCTION?**

by

Michael T. Klemick

December 1997

Thesis Advisor:

Peter R. Lavoy

Thesis
K5822

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**CAN IRAQ BE DETERRED FROM USING WEAPONS OF MASS
DESTRUCTION?**

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Lieutenant, United States Navy
B.S., United States Naval Academy, 1989

Submitted in partial fulfillment
of the requirements for the degree of

MASTER OF ARTS IN NATIONAL SECURITY AFFAIRS

from the

**NAVAL POSTGRADUATE SCHOOL
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ABSTRACT

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This thesis examines the use of conventional and nuclear deterrence by the United States and coalition allies during the 1991 Gulf War. It then looks beyond the alleged effects of nuclear deterrence and examines Iraq's development and past use of weapons of mass destruction (WMD). The threat of nuclear retaliation only moderately influenced Iraq's decision to refrain from CBW use during the Gulf War. Other factors such as inexecutable C^2 , logistical collapse, and dubious munition reliability also mattered. The implications for the United States are that: (1) current nonproliferation regimes are insufficient to prevent the continued buildup of WMD by Iraq; (2) nonproliferation policies must be supplemented by policies designed to deter WMD use; and (3) asymmetrical conventional military force targeting Saddam Hussein's regime is required to deter Iraq's use of WMD.

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EXECUTIVE SUMMARY

The proliferation of weapons of mass destruction (WMD) constitutes grave challenges to U.S. national security interests. International arms control agreements are limited and have proven to be insufficient to contain the spread of nuclear, chemical and biological weapons. Most recently, the 1991 Gulf War with Iraq demonstrated that chemical and biological weapons (CBW) could expose the vulnerabilities of U.S. military ground forces. Additionally, WMD proliferation produces dangerous regional security dilemmas. Even with intense nonproliferation efforts by the United States and the international community, allied coalition forces had to face real and potentially even more serious complications posed by Iraq's CBW arsenal. Lessons taken from the Gulf War emphasize areas of particular concern for the military forces.

Imperfections in the nonproliferation regimes create opportunities for highly motivated developing countries to acquire WMD. The number of states in possession of CBW arsenals will increase. As Defense Secretary William Cohen said during his Senate confirmation hearing in January 1997, "I believe the proliferation of weapons of mass destruction presents the greatest threat that the world has ever known. We are finding more and more countries who are acquiring technology—not only missile technology—and are developing chemical weapons and biological weapons capabilities to be used in theater and also on a long-range basis. So I think that is perhaps the greatest threat that any of us will face in the coming years."

Two superpowers with well-defined military capabilities proved that nuclear weapons could deter the use of nuclear weapons throughout the Cold War. Deterrence,

therefore, was a matter of dealing with a known enemy with known capabilities.

Determining the identity and potential military capability of new CBW arsenals is a significantly more difficult problem. Departure from the traditional superpower deterrence paradigm is necessary for the continued success of nonproliferation regimes. In fact, the reliance on U.S. nuclear weapons to deter non-nuclear WMD threats defeats international nonproliferation efforts. Countering CBW with nuclear weapons legitimizes the existence of CBW and portrays them as a decisive political-military tool.

The case of Iraq represents the inherent dangers emanating from the inadequate nonproliferation regime. The 1991 Gulf War and, more recently, conflicts with the United Nations weapon inspectors, presented ambiguous security threats to the Gulf Region. Research suggests that the United States contemplated issuing explicit nuclear deterrence threats in 1991 but concluded that this course was too costly. As a result, U.S. officials often hinted at “massive retaliation” but did not issue explicit threats of nuclear retaliation should Iraq use CBW.

Foreign policy directed at containing Iraq must be based upon a realistic understanding of the nature of the current regime. Saddam Hussein’s regime appears to be firmly entrenched. It is quite possible that this regime will survive well into the twenty-first century. Therefore, the United States can expect continued revanchist behavior as Iraq seeks hegemony in the Gulf. Current UN sanctions have little effect on the leadership of Iraq. Given the current conditions, Iraq will not discontinue its pursuit of WMD. The United States cannot completely stop the spread of WMD and related

materials as such. The findings of this thesis show that a more forceful, conventional military approach is necessary to achieve success in deterring Iraqi aggression.

Present and future deterrence of Iraq's WMD must include the following three concepts. First, the implementation of invasive nonproliferation measures are needed to raise the costs to Iraq of its pursuit of WMD. Second, the United States ought to deploy the conventional military capabilities required to destroy the power of the Iraqi regime in the event that Iraq uses WMD. Third, it is also necessary to make it clear to the Iraqi regime that it would not survive the use of WMD against U.S. territory, troops, or friendly states. It is only through these measures that Iraq is likely to be deterred from using WMD in the future.

I. DETERRING IRAQI WEAPONS OF MASS DESTRUCTION

We received a wake-up call with Saddam Hussein's use of SCUD missiles during operation Desert Storm and the new information on his ambitious nuclear, biological and chemical weapons programs. The proliferation of these horrific weapons presents a grave and urgent risk to the United States and our citizens, allies and troops abroad. Reduction of this risk is an absolute priority of the United States.¹

A. IRAQ'S EMERGENCE AS A FORMIDABLE THREAT

Chemical and biological warfare was a distinct possibility during the Gulf War. The coalition of military forces, led by the United States, prepared for and defended against this threat. Only recently did the Pentagon admit that troops were exposed to chemical weapons on the battlefield. It now appears that inadvertent exposure occurred when the allied coalition detonated a weapons bunker. The question that remains is why the Iraqis refrained from conducting chemical and biological warfare (CBW) in the face of overwhelming odds?

This thesis shows that the threat of nuclear weapons in itself might not have deterred Iraq from using CBW. Evidence suggests that the widely accepted assumption might be faulty, or at least incomplete. Other factors, internal to Iraq and related to the tactical decision matrix, might have had as much, or more, of an effect on Iraq's CBW behavior as did U.S. nuclear deterrence. One highly plausible, alternative explanation for the lack of CBW use lies in Iraq's ability effectively to employ the weapons. I offer evidence that Iraq's CBW arsenal capability, while advanced, was not robust enough to

¹ William J. Perry, *Proliferation: Threat and Response* (Washington D.C.: U. S. Government Printing Office, 1996), iii.

inflict widespread damage on the allied coalition. Furthermore, even had such an arsenal existed, Saddam Hussein might have lacked the command and control infrastructure needed to carry out such an attack.

The conflict with Iraq is representative of the problems facing U.S. national security in the aftermath of the Cold War. Strengthening and enforcing the international nonproliferation regimes has become one of the six core U.S. national security objectives.² This thesis provides guidance for future relations with Iraq and other states possessing non-nuclear weapons of mass destruction (WMD) capabilities.

The conflict between Iraq and the allied coalition, led by the United States, leaves several unanswered questions and dilemmas for U.S. policy makers. Concerned about the possibility of a CBW attack, the United States and other nuclear-capable allies used an ambiguous nuclear deterrence posture to dissuade Iraq from crossing the WMD threshold. Why was Iraq, a non-nuclear country, considered to be worthy of nuclear deterrence? What capability did it possess in its military arsenal that required such a policy response? How did it arrive at this position of power and why did it threaten the region? What were Iraq's motivations for such actions? Why was it willing to take on the United States and its allies in the face of overwhelming odds? The answers to these questions illustrate the dangers of relying on nuclear deterrence against non-nuclear countries.

This conflict was very much unlike past conflicts. Iraq, without the benefit of a superpower sponsor, threatened the regional security of the Middle East and the national

² *A National Security Strategy for a New Century* (Washington D.C.: The White House, May 1997), p. ii.

security interests of the United States. In response, the United States attempted first to reach a political solution to the Iraqi invasion of Kuwait. The Iraqi leadership turned away all diplomatic initiatives. The next step for the United States was to seek a military solution.

The United States realized early on that it had to maintain the delicate balance of the Middle East while simultaneously securing its own national interests. The balance could only be maintained through the formation of an allied coalition. Upsetting the political balance among the Arab states would benefit neither the United States nor Israel. Furthermore, it was essential to the U.S. for Iraq not to be occupied by Iran or any other neighboring country seeking regional dominance. The United States needed a consensus of world opinion, particularly within the Middle East, prior to taking action. The task would be to punish criminal aggression while maintaining security guarantees for the surrounding countries. One wrong step and the United States could have been viewed as the aggressor. The implications of a perceived western hegemony over the Arab States could prove to be politically and economically detrimental to the United States.

B. CHALLENGES FACING THE UNITED STATES

It generally is assumed that the threat of a nuclear strike deterred Iraq's use of chemical and biological weapons. The following excerpt is taken from President George Bush's address to the nation on 16 January 1991:

As I report to you, air attacks are under way against military targets in Iraq.... I've told the American people before that this will not be another Vietnam. And I repeat this here tonight. Our troops will have the best possible

support in the entire world, and they will not be asked to fight with one hand behind their back.³

The message was clear: the full resources of the United States would be used in this engagement, though not necessarily nuclear weapons.

As former Secretary of State James Baker stated in his memoirs, "...I purposely left the impression that the use of chemical or biological agents by Iraq could invite tactical nuclear retaliation."⁴ The British Prime Minister, Margaret Thatcher, promised the full cooperation of her government and "was not ruling out any options" in the event of a CBW strike by Iraq.⁵

The political rhetoric surrounding the impending conflict suggested that nuclear retaliation would follow Iraq's employment of CBW on the battlefield. Invoking the nuclear deterrent option was a dangerous gamble by U.S. policy makers. Two liabilities existed. First and foremost, the credibility of the United States and its nuclear program was on the line. If that credibility was called into question, the President of the United States had two stark choices: stand and deliver or back down. Crossing the nuclear threshold meant legitimizing the use of nuclear weapons in a period when the United States was working toward arms reduction efforts with the Russians and nuclear nonproliferation for other countries.

The message sent to developing countries, as well as to established nuclear-capable countries, would be that use of nuclear weapons is legitimate, which directly

³ Cited in Harry G. Summers, *A Critical Analysis of the Gulf War* (New York: Dell Publishing, 1992), p. 153.

⁴ James A. Baker, III, *The Politics of Diplomacy* (New York: G.P. Putnam & Sons, 1995), p. 359.

⁵ Cited in Joseph S Nye, Jr. and Roger K. Smith, *After the Storm: Lessons from The Gulf War* (Lanham: Madison Books, 1992), p. 303.

contradicts Nuclear Nonproliferation Treaty (NPT) edicts. What incentives would states have to support the NPT and other international agreements if nuclear weapons were used again by the United States? The action effectively undoing arms reduction trends would come from the country leading the NPT effort. Nuclear weapons and related technology therefore would be coveted by a multitude of nations.

Secondly, a more sinister implication of the U.S. playing the nuclear deterrent option would be the justification of the possession and use of CBW. Developing countries would perceive CBW as powerful and desirable weapons if they elicited nuclear retaliation in the Gulf. This fact alone would inspire a resurgence in research and development for CBW. Faced with perceived WMD requirements, many countries will opt for the less costly and less time-consuming development of CBW to secure their national interests. Nuclear retaliation against a chemical or biological attack would raise the credibility of CBW as a viable political-military tool.

While many deny that the United States attempted to use nuclear deterrence in the Gulf War, much can be said to the contrary. Statements by President Bush and Secretary of State Baker left much to the imagination. Several official statements were intentionally designed with calculated ambiguity. Tariq Aziz, Iraq's Foreign Minister, was clearly shaken during a January 1991 meeting with Secretary Baker prior to the hostilities. He evidently was convinced that the United States would respond with nuclear weapons.⁶ The United States had medium- and long-range nuclear bombers in the theater. Nuclear carriers, cruisers, frigates and destroyers—all nuclear weapons-

⁶ Ibid., p. 359.

capable—were in the Persian Gulf. The extensive use of the Tomahawk cruise missile further strengthened the threat. Conventional warheads could easily be replaced with nuclear warheads on the Tomahawks. The capability to deliver nuclear weapons was there. Two questions remained: (1) whether or not the Iraqis believed the United States actually would use nuclear weapons; and (2) what conditions would prompt the United States to use nuclear weapons. Finally, the United States never publicly dismissed the possibility of using nuclear weapons in the conflict.

The ability of the United States to maintain strategic deterrence against the use of WMD against U.S. territory, troops, or allies came perilously close to a credible challenge in 1991. Countries watchful of the events unfolding in the Gulf War observed the diplomatic response CBW received from the United States in 1991. Intense political debate and policy dilemmas resulted over the possibility of CBW use. Should the United States respond with nuclear weapons or conventional forces? In 1997, the debate continues. This thesis argues that the proper deterrent to CBW is asymmetrical conventional force. Pursuing the nuclear deterrence is improper for two reasons. First, countering CBW with nuclear weapons greatly enhances the attractiveness of CBW as the "poor man's atomic bomb." Second, and more seriously, it challenges the nuclear credibility of the United States. Unlike the nuclear threshold, the threshold for CBW has been crossed many times. The likelihood of CBW use in the future is high. CNN reported on 24 November 1997 that over twenty countries are now pursuing CBW arsenals. Adopting a nuclear deterrent response to CBW would make the next challenge to nuclear credibility simply a matter of time. Further complicating the deterrent

response question is the non-state actor terrorist use of CBW. Adopting a deterrent policy, based on nuclear response, might actually encourage CBW use by non-state actors. The threat of a nuclear attack against a small or unknown actor is not politically or military credible.

Promoting an asymmetrical conventional response benefits the U.S. policy makers in many ways. First, and foremost, it maintains the leadership of the United States in the nonproliferation effort. Second, there is a variety platforms capable of delivering a multi-layered response. The element of surprise and unpredictability remains with the United States. Non-state actors would be less likely to achieve their objectives if they could not accurately predict the response by the United States. Third, the message is clear: conventional forces can deter CBW. The response will be delivered overwhelmingly and from a stand-off range. The likelihood of subsequent CBW counteroffensive attacks achieving success would be remote. Additionally, the increased awareness of proliferation gaps (dual use technology, medical research, economic incentives, etc.,) has inspired a resurgence in CBW protection technology. Lastly, operating in a CBW environment while continuing to deliver asymmetrical conventional retaliation subverts the intended effects of CBW.

C. THESIS STRUCTURE AND OBJECTIVES

This thesis tests the wisdom of claims about the effectiveness of nuclear deterrence of CBW during the Gulf War. The argument developed here is that the Iraqi decision to refrain from CBW during the Gulf War cannot be explained entirely as the product of fear of nuclear retaliation. Furthermore, there is an obvious danger to policy

makers in relying upon the nuclear threat as a viable deterrent. If the nuclear deterrent is challenged, and not met, then nuclear deterrence has failed. Nuclear deterrence is a cornerstone of national security for the United States. The United States cannot afford a credible challenge to nuclear doctrine without responding appropriately. This fact leaves the policy makers with few plausible options when exercising nuclear deterrence. The implications of such a failure would undermine the security of the United States and those countries that rely upon U.S. security assurances.

The policy makers of the United States face numerous constraints when dealing with Iraq. Presently, Iraq is not a nuclear power. Iraq possesses an extensive chemical and biological weapons arsenal. Furthermore, the government has not terminated its quest for nuclear capability and still maintains a large, indigenous knowledge base.⁷ The unresolved question of what type of international response is appropriate for a CBW strike continues to plague U.S. policy makers.

This thesis examines the methods of conventional and nuclear deterrence used by the United States and its coalition allies. It looks beyond the alleged effects of nuclear deterrence to examine Iraqi defense, policy and capabilities. Also included is a historical analysis of Iraqi actions in similar past conflicts, when Iraq deliberately used CBW.

The second chapter examines the Iraqi development of CBW capabilities and conduct through 1991. The focus on Iraqi capabilities and intentions prior to and during the Gulf War challenges the deterrence theories presented in Chapter III.

⁷ As stated in *Proliferation: Threat and Response*, November 1997, "Iraq retains considerable expertise (scientists); possibly hidden some documentation, infrastructure. [They] could manufacture fissile material for a nuclear device in five or more years, if sanctions were lifted, or substantially reduced and considerable assistance provided. They have ratified the Nuclear Nonproliferation Treaty but have not signed the Comprehensive Test Ban Treaty."

Chapter III details the efforts by the United States and its coalition allies to deter Iraq from using CBW. Identifying the power of the Iraqi regime and understanding its motivations shapes the deterrent threat delivered by the United States and coalition forces. The deterrence strategy employed by the United States and its allies is contrasted to the capabilities and intentions described in Chapter II. The Nonproliferation Treaty (NPT), the Chemical Weapons Convention (CWC) and the Biological Weapons Convention (BWC) are pivotal to understanding the policy constraints faced by U.S. policy makers.

Chapter IV examines alternative explanations for why Iraq chose to refrain from CBW use. Several internal factors such as command and control (C^2), logistical disintegration and the deterioration of CBW munitions contributed to the tactical decisions made by Saddam Hussein's dictatorial regime. The reliability of the CBW munitions was a major concern for Iraq. Available data shows that the military refinement of chemical agents was crude. Poor quality control contributed to an extremely short shelf life of munitions, thereby reducing reliability.

Chapter V discusses Iraqi WMD efforts after the Gulf War and assesses the implications for future U.S. defense policy. The oppressive regime, led by Saddam Hussein, has survived despite six years of severe economic sanctions. The current political discourse, via the UN, falls well short of the statutes of UN Security Council Resolution 687, in force since 1991. The United States must support this course of action, for obvious political reasons, but not rely on it exclusively to reduce the risk of Iraqi CBW. Initiating a more aggressive deterrent policy ensures U.S. core security

objectives and reduces the risk of WMD proliferation. Iraq continues to resist the UN ability to locate and destroy the WMD stockpiles and related technology. CBW research and development continues despite violating the UN Security Council resolution prohibiting Iraq from such action. Iraqi behavior evolves with the intent to evade U.S. counterproliferation and ATBM efforts. The actions of the UN, while equitable, do not meet American national security objectives. UN efforts do not counteract the efforts of Iraqi leadership to eliminate vulnerabilities exposed in the Gulf War.

There are several implications for U.S. defense policy. According to Anthony Cordesman the U.S. intelligence community estimates that Iraq will:

- Continue to develop WMD using massive efforts of concealment, denial and compartmentalization.
- Continue to keep delivery methods covert or compartmentalized from other forces. Actual weapons may often be held apart from the delivery systems by special units.
- Develop increased and improved C⁴I/ BM reporting directly to leadership.
- Create crisis-driven weapon deployment, utilization and escalation devoid of doctrine. This new method will rely upon the perception of the individual field commander rather than chain of command.
- Show limited restraint in attacking civilian targets. The regime might risk escalation if it is likely to lose power.
- Revert to proxy groups or unconventional means of delivery of WMD outside the context of war. Attacks might be aimed at U.S. defense efforts within the region, internal political opposition or regional peacekeeping forces.
- Use combinations of chemical and biological agents to confuse or defeat CBW protection gear or immunizations.
- Perceive arms control as an extension of conflict and Western hegemony instead of an essential security option.⁸

The guidance provided by this discussion is applicable for policy concerning similar, non-nuclear WMD proliferators.

⁸ Anthony H. Cordesman and Ahmed S. Hashim, *Iraq: Sanctions and Beyond* (Boulder: Westview Press, 1997), p. 337.

D. FINDINGS

There are three major findings:

1. Nuclear deterrence, alone, was not responsible for deterring Iraqi use of WMD.
2. Current nonproliferation regimes slow the acquisition process but are not sufficient to prevent Iraqi WMD buildup.
3. Additional enforcement and deterrence efforts are required to counter Iraqi WMD.

The major ramifications for U.S. policy are considerable. Current Administration support of international nonproliferation treaties severely restricts nuclear deterrence policy options. The Nuclear Nonproliferation Treaty (NPT), the Chemical Warfare Convention (CWC), and the Biological Weapons Convention (BWC) prohibit the acquisition of weapons of mass destruction. Alluding to nuclear deterrence, directly or indirectly, in a crisis eviscerates these international treaty regimes. Developing countries seeking security assurances from the United States generally will not tolerate hypocrisy in U.S. foreign policy. Threatening the use of WMD legitimizes their existence. The incentives to disregard the nonproliferation regimes are too strong for developing countries to ignore.

The Iraqi WMD program continues to flourish despite nonproliferation regimes and UNSCOM inspections. Iraq refuses to cooperate fully with the UN Security Council resolutions. The existence of Iraqi WMD continues to threaten U.S. security forces in the northern and southern No-Fly zones in Iraq.

Iraq's covert procurement of WMD closely parallels that of other developing nations with WMD ambitions. Closely monitoring Iraq will reveal the patterns of

exploitation in the nonproliferation regimes. Lessons learned from the Iraqi case study can be applied to other WMD proliferators.

Finally, the United States ought to continue to uphold international nonproliferation policies. Convincing other nations to give up or abandon WMD procurement requires considerable U.S. leadership, but it also requires international support. Great care must be taken for the United States not to appear duplicitous. Failure to sustain international backing might create the appearance of U.S. hegemony in the Middle East. Such a development would damage U.S. interests and might provide Iraq, or other nations, further incentive to develop WMD arsenals.

II. IRAQI WMD CAPABILITIES AND CONDUCT

A. INTRODUCTION

The purpose of this chapter is to describe the military strengths and capabilities of the Iraqi military. The information presented is a chronological account of a dictator's attempt to take a Third World country and mold it into a hegemonic regional power. The known facts and available statistics are current up to the commencement of the Persian Gulf War. This detailed discussion serves as background information for an examination of the actions and intentions of the U.S. government presented in Chapter III.

B. TERMS AND DEFINITIONS

A basic familiarity with chemical and biological technology is essential in order to comprehend the complex appeal of CBW to Iraq. The following definitions and terms are employed throughout this thesis.⁹

1. Weapons of Mass Destruction

A weapon of mass destruction is any weapon or device that is intended to cause, or has the capability of causing, death or serious bodily injury to a significant number of people through the release, dissemination, or impact of :

1. Toxic or poisonous chemicals or their precursors;
2. a disease organism; or
3. radiation or radioactivity.

⁹ Defense Special Weapons Agency (DSWA), *Weapons of Mass Destruction Terms Handbook* (DSWA-AR-40H 01 May 1997).

2. Chemical Weapons (CW)

Chemical weapons are those that produce their effects on a living target, man, animal, or plant, by virtue of their toxic chemical properties. It is important to note that chemical weapons need not be aimed specifically at men, but also can be directed at crops. Anti-personnel chemical weapons have been in effective use since the First World War. It is only with the advent of air power that anti-crop chemical weapons have been seriously considered. The anti-personnel weapons can be placed in several arbitrary categories:

1. Blood and choking agents.
2. Blister (vesicant) agents.
3. Incapacitating agents.
4. Psychochemicals.
5. Nerve agents.

3. Blood Agents

Blood agents are absorbed into the body primarily by breathing. They prevent the normal utilization of oxygen by the cells and cause rapid damage to body tissues. Blood agents such as hydrogen cyanide (AC) and cyanogen chloride (CK) are highly volatile and in the gaseous state dissipate rapidly in the air. Because of their high volatility, these agents are most effective when surprise can be achieved against troops who do not have masks or who are poorly trained in mask discipline. In addition, blood agents are ideally suited for use on terrain that the user hopes to occupy within a short time. Blood agents rapidly degrade a mask filter's effectiveness. Therefore, these agents could also be used to defeat a mask's protective capabilities when combined with other agents.

4. Blister Agents

Blister or vesicant agents are primarily used to cause medical casualties. These agents might also be used to restrict use of terrain to slow movements, and to hamper use of material and installations. Blister agents affect the eyes and lungs and blister the skin. Sulfur mustard, nitrogen mustard and lewisite are examples of blister agents. Most blister agents are insidious in action; there is little or no pain at the time of exposure, except with lewisite which causes immediate pain on contact.

5. Incapacitating Agents

An incapacitating agent is any agent that produces physiological or mental effects, or both, that might persist for hours or days after exposure, rendering individuals incapable of concerted effort in the performance of their assigned duties. Complete recovery of incapacitating agent casualties is expected without medical treatment.

6. Psychochemicals

A psychochemical is an agent that incapacitates by distorting the perceptions and cognitive processes of the victim, such as Lysergic Acid Diethylamid, (LSD).

7. Nerve Agents

These are extremely toxic compounds that produce convulsions and rapid death by inactivating an enzyme (acetylcholinesterase) essential for the normal transmission of nerve impulses. All nerve agents belong chemically to the group of organophosphorous compounds. They are stable and easily dispersed, are highly toxic, and have rapid effects both when absorbed through the skin and via respiration. All nerve agents in pure state are colorless liquids. Their volatility varies widely. Nerve agents can be manufactured

by means of fairly simple chemical techniques. The raw materials are inexpensive and readily available. The most important nerve agents in CW arsenals are: tabun, sarin, soman, cyclohexyl methylphosphonofluoridate, and o-ethyl s-diisopropylaminomethyl methylphosphonothiolate. Tabun, sarin and soman are known as G agents.

Exposure to low doses of a nerve agent are characterized by increased saliva production, a running nose, and a feeling of increased pressure in the chest. The pupil also becomes contracted which impairs night vision. Increased exposure or higher doses produce pronounced muscular symptoms. Convulsions, paralysis, and loss of consciousness are common results.

Nerve agents have an extremely rapid effect. If medical treatment is expected to remedy the affliction, it must be administered immediately.

8. Unitary Technologies

Most chemical ammunition can be described as unitary which implies that it contains one ready-to-use CW agent.

9. Binary Technologies

Binary technology implies that the final stage in the synthesis of the nerve agent is moved from the factory into the warhead, which thus functions as a chemical reactor. Two initial substances stored in separate containers are mixed and allowed to form the nerve agent when the ammunition (bomb, projectile, grenade, etc.) is on its way toward the target. Until the actual moment of use, the ammunition contains only relatively non-toxic initial substances, called precursors. It is therefore considered to be safer to

manufacture, store, transport and destroy. Binary technology greatly extends the shelf life of the munition.

10. Biological Agents

A microorganism that causes disease in man, plants, or animals or causes the deterioration of material.

11. Biological Warfare (BW)

The use, for military or terrorist purposes, of living organisms or material derived from them, which are intended to cause death or incapacitation in man, animals or plants.

12. Toxins

Toxins are poisonous, non-living substances obtained from biological sources which produce non-transmissible effects. Toxins can now be synthesized in the laboratory and can therefore be regarded as either chemical or biological agents. It should be appreciated that, as with chemical agents, toxins vary in persistency when delivered. For instance, botulinum is non-persistent, whereas tricothecene mycotoxins are extremely persistent. Toxins are also very difficult to detect.¹⁰

13. Nuclear weapons

A device that releases nuclear energy in an explosive manner as the result of nuclear chain reactions involving the fission or fusion, or both, of atomic nuclei.¹¹

¹⁰ John Hemsley, *The Soviet Biochemical Threat to NATO: The Neglected Issue* (London: Macmillan Press, 1987), p. 125.

¹¹ DSWA, *Weapons of Mass Destruction Terms Handbook*, p. 93.

C. BACKGROUND ON IRAQ

1. Introduction

The following chronology provides insight into the actions and motivations of the Iraqi government. There is a pressing urgency on the part of the leadership to take Iraq's fledgling status and redefine it as a leader within the region. Underlying this pursuit is a desperation few developing countries have experienced. Embracing WMD as a political tool is a testament to the continued strife, insecurity, and impudent nature of Saddam Hussein's regime.

2. Iraq—A Twentieth Century State

Iraq is a twentieth-century state, having been created in 1921. At that time, the Middle East was being redrawn by Britain and France after the First World War. The country's population is not homogenous and includes numerous religious sects of Shi'a and Sunni Muslims. The population also includes one non-Arab minority, the Kurds. The assigned borders have been considered an injustice by the Iraqi ruling elite. Bordered on six sides by countries with significantly differing interests, Iraq is landlocked. The colonial powers, Britain and France, were careful not to give any state in the newly designed Middle East an advantage that would allow it to become too powerful. Iraq's boundaries, which were drawn upon European economic and political considerations rather than demographics, created tumultuous undercurrents that would plague the country. The diverse ethnic and religious makeup of Iraq fuels the continuous social tension. The religious division is approximately 60 percent Shi'a Muslim and less than 30 percent Sunni Muslim.¹² Currently, the Sunnis control the government.

¹² Mussallam Ali Mussallam, *The Iraqi Invasion of Kuwait* (London: British Academic Press, 1996), p. 68.

Ethnically, the country is divided between Arabs and the non-Arab Kurds. More recently, the Sunnis and the Kurds have established themselves as powerful political forces within Iraq. The Kurdish problem affects domestic politics as well as foreign policy.

The Kurdish people number between eight and eighteen million spread over five countries-- Iran, Iraq, Turkey, Syria, and parts of the former Soviet Union.¹³ Politically, the Kurds vehemently oppose Arab nationalism and Arab unity. In 1968, the Ba'ath party seized power. The pro-Arab Ba'ath party despises the Kurds. In 1970, the Ba'ath party, led by Saddam Hussein, reached an agreement with Kurdish nationalists to allow for autonomous rule.

In subsequent years, the Ba'ath party solidified its political position and gained complete control of the government. Powerful economic forces also favored the ruling party in its drive for political consolidation. The nationalized oil industry enhanced and secured the regime's hold on the country. Appeasement of the Kurds was no longer an issue. Feeling slighted, the Kurds organized a resistance movement and allied themselves with Iraq's neighbor and foe, Iran. Iran saw the political and economic success of the Iraqi regime as a regional threat. The tension between the two countries eventually would lead to war in 1980. The war would last eight years. It ended with the acceptance of United Nations resolution 598 which officially terminated the hostilities. Iraq, however, continued to wage war within its borders against the Kurds.

¹³ Ibid., p. 69.

While other developing countries have demonstrated a propensity for acquiring WMD, only Iraq has been enthusiastic to use them. Iraq used chemical weapons on numerous occasions against Iran beginning in 1983. Iran reported 45,000 killed or injured by chemical weapons.¹⁴ In 1987-88, Iraqi aircraft dropped chemical weapons on Kurdish villages in northern Iraq. In the city of Halabjah, it was reported that 5,000 men, women, and children perished.¹⁵

The financial impact of the Iran-Iraq war was immense. Many analysts saw Iraq ceasing its belligerence and returning to the pre-1980 status quo. Unfortunately, this did not happen. Seeking retribution and in order to reassert Iraq as the Middle East's premier power, Hussein focused his attention outside his borders. He meddled in the Lebanese civil war, threatened neighboring countries, and exacerbated the already intense Arab-Israeli conflict. The intent was to focus the attention of a militant Arab coalition against the United States and Israel. For Hussein, military force is preferable to diplomatic discourse when it comes to foreign policy. These delusions of Middle Eastern leadership led him to plan an invasion of Kuwait in 1990.

3. The Iraqi Dictator

The actions of the Iraqi leadership and military are demonstrative and extreme, to say the least. Jerrold Post attributes this to Hussein's submersion in the Ba'athist ideology.¹⁶ In short, Ba'athists believe that Pan-Arab unity is only achieved under a single, strong leader and by expelling all outsiders. This line of reasoning is what

¹⁴ *CNN: War in the Gulf* (Atlanta: Turner Publishing Co., 1991), p. 47.

¹⁵ *Ibid.*, p. 47.

¹⁶ *A Special Report: The Gulf Crisis, Finding a Peaceful Solution* (Washington D. C.: United States Institute of Peace, 1990), p. 8.

Hussein has used to vindicate his actions. Post states, "...in his mind, the goals of Saddam and Iraq are indistinguishable."

Post goes on to add, "Although Saddam is not crazy, he is often out of touch with political reality.... There are two main reasons: he is culturally quite narrow..., [and] he is surrounded by sycophants."¹⁷ To label him a madman would be irresponsible. This tends to encourage policy makers to see him as unpredictable and not understandable. A distinction must be made between being dangerous and being irrational. He is, without a doubt, dangerous. Four psychological characteristics Hussein exhibits are: unbounded self-exaltation; unconstrained aggression; absence of conscience; and a paranoid outlook.¹⁸ Even so, Hussein sees himself as a great world leader and not a martyr. He will back off if there is a way out.

For over twenty-eight years, Saddam Hussein has been at the forefront of Iraqi politics. Eleven of those years he was second in command. From 1978 to the present, he has been the undisputed leader. He entered his first major war within two years of assuming the presidency. Two years following the conclusion of the Iran-Iraq war, he invaded Kuwait. During his reign, Iraq has seen only two years of peace.¹⁹ Hussein's genius, and the thing that keeps him in power even after the crushing defeat of 1991, is his cautious proficiency to seek out potential rivals and eliminate them prior to any serious challenge to his rule. His iron-fisted leadership and repressive measures have created stability within the country. Yet, outside the borders, he has created much suspicion and concern. Iraq is viewed as a regional liability within the Middle East.

¹⁷ Ibid., p. 9.

¹⁸ Ibid.

¹⁹ Mussallam, *The Iraqi Invasion of Kuwait*, p. 33.

While most of the command decisions of Iraqi leadership appear to be irrational by Western standards, they are merely a product of Ba'athist indoctrination. Evidence suggests that Hussein's essence developed long before the Gulf War. This is an important point to comprehend if one hopes to understand the short-term goals and strategic vision of Hussein. The application of Western standards or the practice of "mirror imaging" have no place in an understanding of the Iraqi leader's psyche. The answer lies in the core of the Ba'athist ideology.

Formed in 1947, the Ba'ath party, or the Party of Arab Renaissance, called for the creation of a solitary Arab political alliance stretching from North Africa to Iran. Emerging in response to the creation of Israel, the party's rhetoric won the hearts and minds of many young Iraqis. For one young, impressionable Iraqi, Saddam Hussein, Israel's existence signified a divided Arab world and "the takeover of Palestine by international Zionism."²⁰ Another facet of the Ba'athist explanation for the Arab world's fragmentation is British colonialism. Both political rhetoric and ideological writings point to the ill effects of British domination throughout the region and the existence of dogmatic, pro-British regimes. The struggle soon went beyond the liberation of Palestine to the liberation of the entire Arab world.

The early Ba'athists believed that their prayers would be answered in the form of a man destined to rule the Arab world. He would rid the Middle East of the Jews and the colonial powers. This extraordinary leader's core beliefs would be based upon racial purification.

²⁰ Kenneth R. Timmerman, *The Death Lobby* (Boston: Houghton Mifflin Company, 1991), p. 2.

D. IRAQ'S WEAPONS OF MASS DESTRUCTION

1. The Nuclear Program

Iraq signed the nuclear Nonproliferation Treaty (NPT) in 1968. In retrospect, the NPT mattered little to the Iraqis. It is widely believed that Iraqi efforts to obtain plutonium originated in the early 1970s. They concentrated primarily on acquiring overseas technology. In 1976 Iraq obtained its first test reactor from France, the Tammuz-1 or Osirak reactor. It later would be destroyed in an Israeli preemptive strike in 1981. Unofficial French estimates report the plutonium production of the Osirak reactor to be approximately four kilograms per year. Israeli estimates were four times as high. Iraq maintained it would have yielded a maximum of two kilograms per year.²¹

Despite the setback of the Osirak bombing, Iraq dedicated its efforts toward two objectives: (1) replacing the lost Osirak reactor with a heavy water reactor or enriched uranium reactor and associated plutonium separation capability; and (2) developing uranium enrichment production capability.²²

By 1985 Iraq had realized the full impact of the NPT and could not purchase a replacement reactor for the Tammuz-1. A covert project to build a heavy water, natural uranium reactor was launched to counter nonproliferation efforts. Iraq continued efforts on learning how to separate plutonium from irradiated fuel. However, the research and development emphasis had now shifted toward the uranium enrichment processes. The father of the Iraqi enrichment program, Dr. Jaffar D. Jaffar, stated that the bombing of the Osirak reactor was, in fact, a catalyst for the highly-enriched uranium (HEU)

²¹ David Albright, Frans Berkhout and William Walker, *Plutonium and Highly Enriched Uranium 1996 World Inventories, Capabilities, and Policies* (New York: Oxford University Press, 1996), pp. 313-14.

²² *Ibid.*, p. 314.

program.²³ In late 1981 Iraqi nuclear physicists concluded that electromagnetic isotope separation (EMIS) was the primary means of separation and that gaseous diffusion would be the next appropriate method.

Iraq's formal decision to build a nuclear weapon occurred in late 1987. Immediately prior to this decision, Iraq contracted with a Yugoslavian firm to build its first EMIS production facility.²⁴

By 1988, it was apparent to the Iraqi leadership that the results of the nuclear program fell short of expectations. Gaseous diffusion techniques gave way to chemical enrichment. Plans to build a gaseous diffusion facility were in place and the planned commencement for operations was scheduled for 1990. Repeated delays and technical problems interfered with the project.²⁵

Numerous forays into the gas-centrifuge techniques began after a interdepartmental rivalry between Jaffar and the head of the gaseous diffusion effort.²⁶ The result of the clash was a unification of the scientific community and a consolidation of efforts into obtaining centrifuge knowledge and capability. Extensive support and assistance was obtained from overseas. The assistance was so great that inspectors from the International Atomic Agency (IAEA) and United Nations Security Council to the UN Special Commission (UNSCOM) have cited the assistance as the key to the centrifuge program. By 1991, prior to the invasion of Kuwait, the centrifuge program was still two to three years from producing weapon-grade uranium.

²³ Ibid.

²⁴ Ibid.

²⁵ Ibid., p. 315.

²⁶ Ibid.

At the time of the Kuwait invasion, Iraq did not possess the indigenous capability to produce HEU.²⁷ The Iraqi leadership made the decision in mid-August 1990 to divert its stock of HEU to construct a nuclear weapon in a crash program. The plan was to extract the HEU, further enrich it and construct the weapon in a six-month period. Again technical difficulties and delays prohibited this from happening. The Allied bombing campaign sealed the fate of this program in January 1991. Estimates of the success of the crash program, had it been uninterrupted by the bombing, place the date of completion near the end of 1991.

2. Chemical and Biological Weapons Program

Take him unaware by surprise attacks where he is
unprepared. Hit him suddenly with shock troops.
Sun Tzu, *The Art of War*²⁸

a. Introduction

The importance of chemical and biological weapons has long been understood. Historical acceptance of chemical and biological weapons is well documented among developing nations throughout history. The concepts used in CBW are certainly not new by any stretch of the imagination. The use of poisons, choking agents, intoxicating fumes and primitive bacteriological warfare is conspicuous in documented history. Poisoned arrows have been in use throughout the ancient world. Certain peoples of varying countries still use them today. The use of poisoned arrows is ongoing in remote parts of India, China, Africa, South America, New Guinea, and

²⁷ Ibid., p. 317.

²⁸ Michael I. Handel, *Masters of War: Sun Tzu, Clausewitz, and Jomini* (London: Frank Cass, 1992), p. 108.

Australia.²⁹ The chemicals used are a derivative of aconite, a highly toxic poison inflicting paralysis of the respiratory system; strophanthus, which acts on the cardiopulmonary system; or curare, which causes convulsions. Along with the evolution of firearms, there have been many attempts to produce poison ammunition. Fortunately, for those lucky enough to survive the initial bullet wound(s), this process has proven to be generally ineffective. The chemical compounds are destroyed in the explosion of the projectile's ignition.

Throughout the history of warfare, the employment of CBW has been regarded as a force multiplier. It has the capacity to provide the battle-winning element. Naturally, it follows that the user will view CBW as a legitimate weapon of war to achieve decisive victory over the enemy. Remarkably, the moral and legal objections to the use have been short-lived. This most certainly was the case in the First World War. The major belligerents accepted and expanded the use of chemical weapons as legitimate weapons of war.

Biological warfare, often referred to as bacteriological warfare, achieves its effects through dispersal of biological or pathogenic agents. Unlike chemical weapons, biological weapons cause disease. Moreover, chemical weapons kill through direct contact with the victims. Biological weapons can and usually do cause epidemics far beyond the original target. Another stark contrast to chemical weapons is the BWs ability to remain active for decades, as in the case of anthrax. The typology of potential disease as a result of BW are represented in the following table:³⁰

²⁹ Hemsley, *The Soviet Biochemical Threat to NATO*, p. 1.

³⁰ *Ibid.*, pp. 123-24.

Table 2.1 Typology of Potential Biological Warfare Diseases

BACTERIAL

Anthrax
Brucellosis
Cholera
Meliodosis
Plague (pneumonic)
Plague (bubonic)
Tularaemia
Typhoid fever

RICKETTSIAL

Q - fever
Rocky Mountain spotted fever
Epidemic typhus

CHLAMYDIAL

Psittacosis

VIRAL

Influenza
Ebola fever
Marburg fever
Lassa fever
Smallpox
Venezuelan equine encephalitis
Various potential arboviruses

FUNGAL

Coccidioidomycosis
Histoplasmosis
Nocardiosis

The most commonly developed BW are from the toxin class. Toxins are poisonous, non-living substances obtained from biological sources, which produce non-transmissible effects. Toxins can now be synthesized in the laboratory and can therefore be regarded as either chemical or biological agents. It should be appreciated that, as with chemical agents, toxins vary in persistency when delivered. For instance, botulinium is non-persistent, whereas tricothecene mycotoxins are extremely persistent.³¹

Toxins are also very difficult to detect. This difficulty in detection offers a attractive property and greatly magnifies this form of BW agent as a potential weapon. Simply put, it would be hard to substantiate the use of this kind of BW because it causes diseases that occur naturally. It does not have to be employed necessarily in a military fashion. That is, no ballistic missile launches or aerial bombing campaigns need to occur. A discreet poisoning of the main water supplies or domestic food sources is just as

³¹ Ibid., p125.

effective and less dramatic. It is this plausible deniability that creates the convincing argument. Table 2.2 lists commonly developed biological toxins.³²

Table 2.2 Some Biological Warfare Toxins

Toxin	Produced by	Symptoms	Effect
Staphylococcal enterotoxin	bacteria	headache, nausea, vomiting, diarrhea	Incapacitating 6-48 hrs.
Botulinum toxin	bacteria	weakness, double vision, dizziness	80% lethal w/out med care. 25% lethal w/med care
Tricothecene mycotoxin (yellow rain)	fusaria species of fungi	nausea, vomiting, blood filled blisters on skin, internal bleeding	lethal in 5% of cases. Incapacitating agent
Cobra neurotoxin	cobra snake	numbness, tiredness, dimming vision, weakness, paralysis of breathing	usually lethal
Palytoxin	marine corals	cardiac arrest	lethal, fast acting when absorbed into cuts
Ricin	castor oil, plant seeds	abdominal pain, fever, burning in throat	lethal w/ high doses
Tetrodotoxin	puffer fish	muscular weakness, collapse	lethal

b. Chemical Weapons

The utility of such weapons makes the choice for the Iraqi government easy. The amount of technological expertise to gain an adequate arsenal is minimal compared to nuclear technology. The ease and cost of production also make CW a logical forerunner as an alternative for nuclear weapons. Until recently, the amount of attention devoted to tracking CW has been almost nonexistent. Compared with tracking fissile materials and launching mechanisms, CW is able to remain obscured in the definitions of dual use materials. This is another added benefit of having CW as an alternative to nuclear weapons. Originally, Iraq developed CW to coincide with its

³² Ibid., p. 125.

nuclear doctrine. Iraqi tactics, no doubt, were influenced by the Soviet doctrine which called for the simultaneous use of CW along with nuclear weapons. For Saddam Hussein CW production was the rational choice for a decisive battlefield weapon while the nuclear program was under development. It aided in the attainment of his regional power aspirations and kept the Iranians at bay during the eight-year war.

Iraq's indigenous capability to produce chemical weapons began in 1974. Refined production of the chemical weapons arsenal began in the early 1980s at the Muthanna State Establishment near Samarra, Iraq. The production efforts were concentrated in two broad areas: blister agents and nerve agents.

Nuclear arsenal production problems accelerated the production of CW and placed greater emphasis in developing it into a more robust arsenal. Iraq has the largest chemical weapons production capability in the Third World.³³ Prior to the commencement of hostilities in 1991, Iraq produced over a thousand tons of agents annually. This figure was arrived at by extrapolating estimates of chemical production for 1985 (10 tons per month), 1986 (50 tons per month), and 1988 (82 tons per month).³⁴

Additionally, Iraq maintains several underground storage facilities dispersed throughout the country.³⁵ The chemical weapons primarily include mustard-type blister agents and the nerve agents sarin, cyclosarin, VX, and tabun.³⁶ These nerve agents are extremely lethal in small doses.

³³ Mike Eisenstadt, *The Sword of the Arabs: Iraq's Strategic Weapons*, (Washington, D.C.: The Washington Institute, 1990), p. 5.

³⁴ Ibid.

³⁵ Seymour M. Hersh, "U.S. Aids Say Iraqis Made Use of a Nerve Gas," *The New York Times*, 30 March 1984, pp. A1, A6.

³⁶ Eisenstadt, *The Sword of the Arabs*, p. 5.

From the inception of the CW program up to the Gulf War, Iraq made tremendous strides in its developmental capabilities. Iraq has developed a highly refined mustard gas in liquid form with a long shelf-life. Unconventional means of CW dissemination have also been pursued. Evidence suggest that Iraq has developed a process to turn the liquid mustard gas into a dry form that is later mixed with a talcum-like powder substance. Referred to as “dusty mustard,” the chemical agent adheres to the powder medium and can then be dispersed via a respiring aerosol. This technique exponentially increases the inhalation toxicity.³⁷ The Defense Intelligence Agency has published a declassified intelligence report on “dusty mustard,” which states: “The agent dusty mustard, and dusty agents in general, are disseminated in a dry aerosol and may be difficult to detect. The aerosol filter in a protective-mask canister will stop a dusty agent and protect the wearer, but unless the agent can be readily detected, the potential victim is unlikely to be masked.”³⁸

Further evidence suggests that the Soviet doctrine and technology aided the Iraqis in the production of advanced chemical weapons. Numerous detections of lewisite, a chemical the Soviets often mixed with mustard, occurred during the Gulf War.³⁹

Iraq used chemical weapons against Iran extensively during the eight-year conflict. Following the conclusion of the Iran-Iraq war, Iraq immediately began work to improve the arsenal. Production efforts were introduced to improve the stability of its

³⁷ U.S. Army, Field Manual 3-3: *Chemical and Biological Contamination Avoidance* (Washington, D.C.: Headquarters, Department of the Army, 16 November 1992), p. 3-1.

³⁸ Defense Intelligence Agency, “*Iraq : Chemical and Biological Capabilities as of August 1990*,” 21 August 1990, GulfLINK document no. 73876681.

³⁹ Timothy McCarthy and Jonathan B. Tucker, “Saddam’s Strategic Arsenal: CBW and Missiles in the Gulf War,” unpublished paper (Monterey: Monterey Institute of International Studies, 1997), p. 4.

unitary nerve agents and transform the weapon into a crude binary round. The precursors of sarin and cyclosarin (a related nerve agent of comparative lower volatility) were combined in bombs or missile warheads.⁴⁰

UNSCOM data documents stockpiled binary munitions prior to the Gulf War “in quantities well beyond prototype levels.”⁴¹ The binary munitions were weaponized as artillery shells, 122mm rockets, and aerial bombs.

c. Biological Weapons

Iraq’s initial foray into the field of biological weapons occurred in the mid-1970s but was soon aborted. Revived in 1985, the Muthanna State Establishment housed only a few biologists. In 1987, the BW program was transferred to a laboratory complex at Al Salman and was overseen by the Forensic Research Department of the Technical Research Department. This facility reported directly to the Iraqi Military Industrialization Corporation and was associated with the Iraqi security services. Presumably, this move was initiated to eliminate any interference with the higher-priority, chemical weapons program.

By 1988 scaled-up research was launched on botulinum toxin and anthrax. Accordingly, a new biological facility appeared at Al Hakam.⁴² The scheme of this facility was reproduced largely from the blueprints of the chemical weapons facility at Muthanna. The buildings were well separated with research areas segregated from the production areas. Al Hakam would serve as a research and development, production and

⁴⁰ Ibid., p. 5.

⁴¹ Ibid.

⁴² *The United Nations and the Iraq-Kuwait Conflict 1990-1996* (New York: United Nations Department of Public Information, 1996), p. 783.

storage facility for biological weapons. However, the filling of munitions would not take place at this facility. Two 1,850-liter and seven 1,480-liter fermenters were transferred from the Veterinary Research Laboratories. Another 450-liter fermenter from a smaller biological weapons production plant, at Taji, was transferred to Al Hakam.⁴³

Later in 1988 research began on several additional biological agents. Production characteristics and destructive capabilities were the primary discriminators which led the Iraqi scientific community to concentrate on production of aflatoxin, wheat smut, ricin hemorrhagic conjunctivitis, a rotavirus, and camel pox virus.⁴⁴ Aflatoxin is a toxin commonly associated with fungal-contaminated food grains. Ingestion of grain products contaminated with aflatoxin results in carcinogenic disorders. Wheat smut causes a black fungal growth on food grains rendering them useless and inedible. Ricin is a protein toxin derived from castor bean plants that is highly lethal to humans and animals. When inhaled, ricin creates a violent breakdown of lung tissue resulting in hemorrhagic pneumonia and death. Hemorrhagic conjunctivitis is an acute disease that causes extreme pain and temporary blindness. Rotavirus causes acute diarrhea leading to dehydration and possible death. Camel pox causes fever and skin rash in camels; infections in humans are rare. Very little work needed to be done on these viruses to produce them in mass quantities.

Initial testing of botulinium toxin and anthrax in aerial bombs occurred in March 1988. Production of botulinium toxin and anthrax for weaponization began in early 1989. Additional weaponization testing occurred in November 1989 using 122 mm

⁴³ Ibid.

⁴⁴ Ibid., p. 784

rockets. Trials of R400 aerial bombs using botulinium toxin and aflatoxin followed in August 1990. Gross production is estimated to be about 6,000 liters of botulinium toxin and 8,425 liters of anthrax at Al Hakam in 1990.⁴⁵

Iraq drastically intensified its biological weapons production after the invasion of Kuwait on 2 August 1990. Emphasis was placed on production and weaponization of anthrax and botulinum toxin. Six veterinary foot and mouth disease plants were converted into biological weapons production facilities. From November 1990 to January 1991, 5,400 liters of concentrated toxin had been produced. Subsequent requirements of massive anthrax quantities required the modification of the botulinium toxin facility at Al-Hakam, in August 1990. The conversion resulted in the production of 340 liters of anthrax.⁴⁶

3. Military Force Buildup

The potential threat of the Iraqi military can only be fully appreciated through an examination of the time period preceding the Gulf War. It is important to note two concepts concerning the military buildup. First, the intelligence community largely overlooked Iraq's acquisitions and intentions while primarily focusing its assets upon Iran.⁴⁷ Second, accelerated advances in technology and types of weapons occurred in a very short period. This is partly due to weapons proliferation and gaps in nonproliferation efforts. In a 25-year period, from the mid-1970s to the Gulf War, Iraq progressed from importing WMD technology and foreign personnel to the indigenous

⁴⁵ Ibid.

⁴⁶ Ibid., p. 785.

⁴⁷ Sally Mullen, Senior Intelligence Analyst, U.S. Arms Control and Disarmament Agency. Lecture, 19 August 1997, Naval Postgraduate School, Monterey, California.

production and weaponization of WMD. Underlying reasons for the transition stem from economic incentives. The attractiveness of arms sales and related technology is far too great for any nation to ignore.

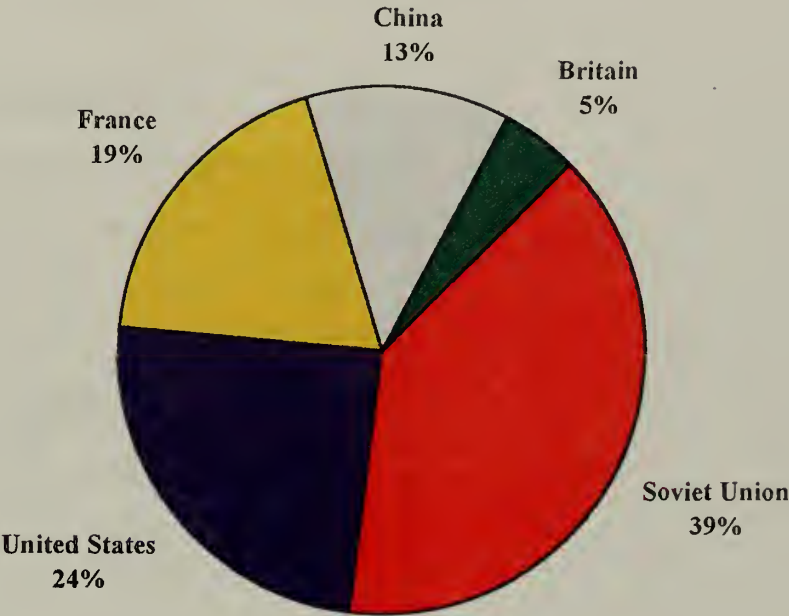
During the period of 1984 to 1988, the five permanent members of the United Nations Security Council were the top five exporters to the Middle East. Their sales, alone, accounted for seventy-five percent of all arms sold to the region. The Middle East accounted for thirty-six percent of all world arms imports during this period.⁴⁸

⁴⁸ U.S. Arms Control and Disarmament Agency, *World Military Expenditures and Arms Transfers*, Annual, 1989.

Figure 2.3 Top Five Arms Exporters and Importers to the Middle East, 1984-1988

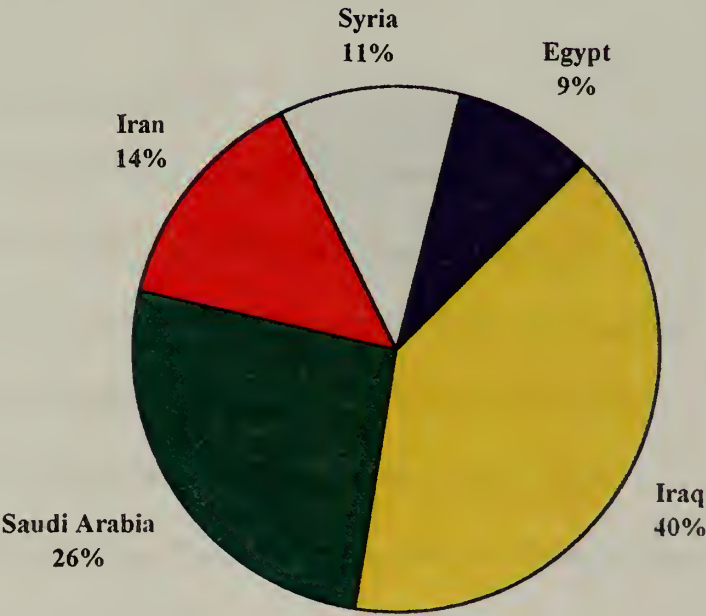
(a) Exporters:

<u>Country</u>	<u>Exports (\$B)</u>
Soviet Union	26.5
United States	16.3
France	12.7
China	8.4
Britain	3.1



(b) Importers:

<u>Country</u>	<u>Imports (\$B)</u>
Iraq	29.7
Saudi Arabia	19.5
Iran	10.5
Syria	8.3
Egypt	6.4



The numbers for Iraq continued to climb and peaked just prior to the commencement of hostilities in 1991. Its military buildup was ominous compared to that of any other country in the region. This buildup is reflected by the data given in Table 2.4.

Table 2.4 Military Buildup in the Middle East

Country	Troops	Tanks	Artillery	Combat Aircraft
Bahrain	2,300	54	20	12
Egypt	320,000	2,425	1,260	485
Iran	305,000	500	800	190
Iraq	950,000	5,500	3,500	665
Israel	104,000	4,290	1,400	565
Jordan	74,000	1,130	195	100
Kuwait	16,000	245	70	23
Lebanon	21,000	100	95	6
Qatar	6,000	24	14	18
Saudi Arabia	40,000	550	475	154
Syria	300,000	4,050	2,150	460
Turkey	528,000	3,725	22,190	485
United Arab Emirates	40,000	130	175	45

Source: United States Naval Institute Military Database (1991).

By mid-January 1991, it was estimated that the number of Iraqi troops available for combat was in excess of one and a half million, including reserves. Assuming the estimates were accurate, the Iraqi army was the fourth largest army in the world behind the Soviet Union, China and the United States respectively. The figures, estimated just prior to the Gulf War, reflect Iraq's strongest military posture in the history of the country. Examining the military arsenal from a historical perspective, one finds that the

procurement timeline is greatly compressed compared that of to similar developing countries. That sense of urgency is still present today.

E. THE IRAN-IRAQ WAR: 1980-1988

1. Introduction

The war between Iran and Iraq witnessed some of the largest-scale fighting since the Second World War. The conflict included naval forces, air forces, terrorism, and most disturbingly, chemical warfare. A conflict of this scale and complexity serves as a warning of potential costs of unchecked proliferation. The war also represented a constant hazard that either country could emerge as the predominant power in the Middle East. The ramifications would have severely impacted U.S. national interests within the region. The same implications carry forward to present day. If Iraq succeeds in obtaining a superior WMD capability, the balance of power among the Gulf States will be lost.

2. The Political and Economic Cost of the War

The actual cost, human and financial, of the eight-year Iran-Iraq war is unknown. However, the political and economic expenditure of both countries was colossal. Repercussions of the eight-year war significantly influenced the ideological restructuring of Iraq. The present political and military motivations are most definitely a byproduct of the Iran-Iraq war. To put the catastrophic loss into perspective, it is comparable to Vietnam or Korea in opportunity costs. The next table illustrates key figures taken from an unclassified CIA working estimate.⁴⁹

⁴⁹ Cited in Anthony H. Cordesman, *The Lessons of Modern War Volume II: The Iran-Iraq War* (Boulder: Westview Press, 1989), p. 3.

Table 2.5 Estimates of the Costs of the Iran-Iraq War: 1980-1988

	Iran	Iraq
A. Human Costs (Number of Lives)		
Casualties	1,050,000-1,930,000	550,000-1,040,000
Wounded	600,000-1,200,000	400,000-700,000
Killed	450,000-750,000	150,000-340,000
Refugees	2,000,000	400,000
Prisoners of War	45,000	70,000
B. Economic costs (Marginal Cost in \$ Billions)		
Arms Purchases	7	25
Oil Reserves	10	55
Pipelines	--	3
Transportation	1	9
War-Risk Insurance	1	--
Petroleum-Product Imports	5	--
Compensation to Families	10	4
Military Salaries	10	10
Repairs to War-Damaged Facilities	5	3
Non-Oil GDP	20	50
Total	\$69	\$159

Table 2.5 does not reflect the opportunity costs of failing to fund economic development and normal economic operations. Baghdad never released a statement on the estimates of war costs. However, the damage sustained was significantly less than that of Iran.

3. Iraq's Chemical and Biological Weapon Use

Iraq is a signatory to both the 1925 Geneva Protocol and the Biological Warfare Convention of 1972. Despite this, Iraq's interest in obtaining CBW dates back to the mid-1960s. Iraq actively sought chemical weapons from Egypt and the Soviet Union following Egypt's use of CW in the Yemens. The foundation of the Iraqi CW arsenal started with Egypt and the USSR. Shortly after acquiring small numbers of weapons, Iraq pursued and obtained a large-scale domestic production capacity courtesy of the

American company Pfaudler, of Rochester, New York.⁵⁰ But, the Iraqi production goals and short timeline conflicted with the services Pfaudler was willing to offer. As a result of the contractual difficulties, Iraq broke off negotiations and looked overseas to the British. The British company Imperial Chemical Industries (ICI), unlike Pfaudler, was well acquainted with the British government's list of export-controlled items. It immediately broke off contact with the Iraqis. Undaunted, Iraq solicited and received assistance from West German, Swiss, Dutch, Belgian and Italian firms. It is also believed that it purchased technical assistance from the West German firm Fritz Werner.⁵¹

The short time span from conceptualizing CBW in the mid-1960s to deliberate use in the field in 1982 is remarkable. Vast economic resources combined with a determined political will delivered WMD to a Third World country in less than 20 years. More importantly, the Iraqi leadership did not hesitate to use its newly-acquired technology in the field.

Iraqi use of CBW throughout the Iran-Iraq war is well documented. Strong evidence suggests that Iraq used and field-tested several types of CW during the war. David Goldberg, of the U.S. Army Intelligence Center, testified to the Special Investigations Subcommittee of the Government Operations Committee, U.S. Senate, on 9 February 1989. He stated that control, incapacitating, blister, choking, blood, and nerve agents were used in the conflict.⁵² Iraq continued to use chemical weapons even after the passage of UN resolution 598 officially ending the hostilities.

⁵⁰ Ibid., p. 507.

⁵¹ Ibid., p. 509.

⁵² Ibid., p. 515.

F. CONCLUSION

To do evil a human being must first of all believe that what he's doing is good....

Ideology--that is what gives devildoing its long-sought justification and gives the evildoer the necessary steadfastness and determination. That is the social theory which helps to make his acts seem good instead of bad in his own and others' eyes, so that he won't hear reproaches and curses but will receive praise and honors.

-Soviet dissident Alexander Solzhenitsyn⁵³

The evidence presented illustrates the level of determination and willingness on the part of Iraq to accumulate WMD. Several factors appear to motivate the Iraqi leadership. The primary motivation comes from Iraq's leader. The depraved and indifferent dictator, as diagnosed by Post, has delusions of becoming the unifier of the Middle East. Stability in the region means little to Hussein. The financial impact of the Iran-Iraq war was immense. It was anticipated that Iraq would cease its belligerence and return to the pre-1980 status quo. Unfortunately, this did not happen. Seeking retribution and in order to reassert Iraq as the Middle East's premier power, Hussein focused his attention outside his borders. He meddled in the Lebanese civil war, threatened neighboring countries, and exacerbated the already intense Arab Israeli conflict. The intent was to ally Arab countries against the United States and Israel. For Hussein, military force is preferable to diplomatic discourse when it comes to foreign policy. It appears that, psychologically, Hussein feels most comfortable when operating from a position of strength. Therefore, WMD affords him the upper hand when dealing with Israel or the surrounding states. Fear and intimidation are the tools.

⁵³ Cited in Leonard G. Horowitz, *Emerging Viruses: Aids and Ebola* (Rockport: Tetrahedron, 1997), p. i.

The successful use of CBW in the Iran-Iraq war convinced the Iraqi leadership of their value as a “decisive weapon.” Chemical weapons along with long range missiles, according to Tariq Aziz,⁵⁴ were tactically significant against ground troops. Additionally, they served as an effective psychological terror weapons against civilian populations.

The lack of international condemnation over the use of CBW added legitimacy to its use. Since Iraq was not rebuked in any way for its use of WMD, Hussein perceived the lack of attention as vindication of its use.

Iraq has typically considered its CBW arsenal as a strategically significant tool to balance Israel’s nuclear arsenal. Tim McCarthy, a senior analyst at the Monterey Institute for International Studies, explains that Iraq’s deterrence posture is two-tiered. The first objective is to deter Israeli air strikes on strategic targets within Iraq (i.e., Osirak in 1981) Secondly, a CBW arsenal deters Israeli first-use of WMD against Iraq.⁵⁵

Ironically, the successful efforts of the nuclear nonproliferation regime provide motivation for the procurement of CBW technology. Problems encountered in developing the Iraqi nuclear arsenal accelerated the production of CBW and placed greater emphasis in developing a more robust, alternative WMD arsenal. Iraq has the largest chemical weapons production capability in the Third World. Prior to the commencement of hostilities in 1991, Iraq produced over a thousand tons of agents annually. This figure was arrived at by extrapolating estimates of chemical production for 1985 (10 tons per month), 1986 (50 tons per month), and 1988 (82 tons per month).⁵⁶

⁵⁴ McCarthy and Tucker, “Saddam’s Strategic Arsenal,” p. 18.

⁵⁵ Ibid.

⁵⁶ Eisenstadt, “The Sword of the Arabs,” p. 5.

The continued pursuit of WMD and the refusal to cooperate with the UN resolutions requiring the elimination of all Iraqi WMD further strengthen the conclusion that Iraq is determined to maintain a WMD arsenal. This determination, aggressiveness, and demonstrated willingness to use WMD directly affects future U.S. policy. What will be the necessary course of action to deter or defend against Iraqi WMD? Chapter III examines past U.S. efforts to deter Iraqi WMD proliferation and use.

III. U.S. EFFORTS TO DETER IRAQ FROM USING WMD

A. U.S. ATTEMPTS AT COERCIVE DIPLOMACY

1. Introduction

Iraq's territorial dispute with Kuwait is not new. Failure of the colonial powers to agree on fixed borders in 1922 planted the seeds of discontent. In 1973 Iraqi troops moved across the border and occupied the Kuwaiti outpost of Samitah. They occupied the region for one year before being forced out by Saudi Arabian diplomatic efforts. The deeply ingrained political disputes would not be eliminated, only pushed aside. On 2 August 1990 Iraq invaded Kuwait again.

The Gulf crisis of 1990-1991 marked a discombobulated period in American foreign policy. The fragile balance in the relationship the United States has with the countries of the Middle East was seriously threatened by Iraq. Extensive diplomatic efforts, attempted by the United States, were aimed at defusing the crisis. The consequences of a failed political solution meant possible confrontation with Iraq's CBW arsenal. Policy makers were now confronted with their first post-Cold War WMD contingency.

Richard Herrmann divides the Gulf crisis into four periods: (1) a pre-crisis period prior to the Iraqi invasion; (2) a reactive crisis phase between 2 August 1990 and early October 1990, in which the United States deployed a deterrent force to Saudi Arabia and employed economic sanctions strategy; (3) a transition phase running from late October 1990 through December 1990 in which U.S. coercive diplomacy moved from an

economic strategy to the threat of direct force; and (4) military action against Iraqi forces in Kuwait.⁵⁷ Herrmann's framework will be the basis of analysis for this chapter.

2. The Pre-crisis Period

On 17 July 1990 Saddam Hussein declared that economic war had been waged on Iraq. He stated that the "subversive policy," undertaken by Kuwait and the United Arab Emirates (UAE), was a direct result of undue influence by the United States. Two days later, the Iraqi National Assembly denounced the "conspiracy" and called for Iraq to bring all available means to bring pressure on Kuwait and the UAE.⁵⁸ The same day, U.S. Defense Secretary Richard B. Cheney reiterated that the U.S. commitment to protect Kuwait during the Iran-Iraq War remained intact.⁵⁹

The political statements from Baghdad continued to intensify as did the troop buildups on the Iraqi-Kuwait border. The United States confined its reply to shuttle diplomacy and firm statements of impending military confrontation. Despite assurances from the leaders of other Middle Eastern countries and high ranking U.S. officials, all meeting privately with Hussein, Secretary of State James Baker was thinking the worst. "The fact that you have people like Saddam Hussein is reason enough to create an incentive to get all the chemical weapons states on board," he told his Russian counterpart, Edward Shevardnadze.⁶⁰ Despite the diplomatic efforts and statements

⁵⁷ Richard Herrmann, "Coercive Diplomacy and the Crisis over Kuwait, 1990-1991," in *The Limits of Coercive Diplomacy*, ed. Alexander George and William E. Simons, (Boulder: Westview Press, 1994), pp. 230-31.

⁵⁸ Nye and Smith, *After the Storm*, p. 299.

⁵⁹ Ibid., p. 299.

⁶⁰ Baker, *The Politics of Diplomacy*, p. 269.

advising Iraq not to enter Kuwait, Hussein's military crossed the border on 2 August 1991.

3. The Reactive Crisis Phase

Following the 2 August invasion of Kuwait, the United States was cautious not to inflame the situation with hostile statements. Instead, the Bush administration condemned the action, froze Iraqi and Kuwaiti assets and deferred action to the United Nations Security Council. The action was deterrence by denial. The U.S. action would deny Iraq the Kuwaiti economic assets they jealously coveted. As a precautionary measure, two carrier battlegroups were ordered into the Gulf with full knowledge that, logistically, a major deployment of American troops was still months away. Domestic political support for using troops to repel Iraq from Kuwait was not reflected in Congress. The Senate was only willing to authorize collective action under the auspices of the UN to restore stability. The Bush administration was all too aware of this fact and set out to build support methodically.

Now that Iraq had occupied Kuwait, President Bush had decided the first imperative was to deter Iraq from invading Saudi Arabia. He released a statement on 3 August stating that Saudi Arabia was a "vital interest" and that further expansion by Iraqi forces would invite U.S. military response.⁶¹ The action, which began as diplomatic pressure, escalated into economic pressure. The endpoint of this strategy was to isolate Iraq through a global political alliance. The difficulty of the sanctions policy was that it placed enormous burdens upon many nations within the coalition. For example, Turkey

⁶¹ Nye and Smith, *After the Storm*, p. 303.

shut down its oil pipeline flowing from Iraq to the Mediterranean. It was estimated that Turkey would lose nearly \$2.5 billion in receipts from this action.⁶² The United States had anticipated such hardships and proceeded to petition the World Bank for interim loans.

4. The Transition From Coercion to Threat of Force

American policy makers concluded the economic impact was taking effect, but not quickly enough. President Bush attempted to “tighten the screws” by announcing that there was “no flexibility” in the U.S. demands regarding the Iraqi withdrawal. Within a one week period, the United States made several overt gestures that the economic sanctions would be joined by military threats. Some of the more notable gestures included: a \$6 billion advanced weaponry sale to Saudi Arabia circumventing Congressional limits; Secretary Cheney’s securing of permission to base U.S. combat aircraft in Bahrain, UAE, Qatar and Oman; and President Bush’s formal announcement that Egypt’s debt to the United States has been canceled.⁶³ The maneuvers were meant to indicate a limit on the tolerance of the U.S. government concerning instability in the Gulf region. Moreover, the applied threat was intended to force Iraq’s hand as the economic embargo exacted its toll on the smaller countries of the allied coalition.

While the actions and implied intentions of the United States appeared to escalate, the official statements were still very guarded. In mid-September, General Michael Dugan, the U.S. Air Force chief of staff, was dismissed for suggesting that a heavy bombing campaign of Baghdad was necessary to expel Iraq from Kuwait.⁶⁴

⁶² Ibid., p. 284.

⁶³ Ibid., p. 316.

⁶⁴ Ibid.

5. Military Action against Iraq

In late October early November 1990, a definite shift appears in the diplomatic efforts of the United States. The discussions move from political cooperation to military cooperation. Iraq's military potential was invoked as further justification to move militarily. In addition to CBW, Secretary Cheney said Iraq that was closer to building a nuclear weapon than before the crisis. In a Thanksgiving Day speech to soldiers stationed in Saudi Arabia, he described the Iraqi WMD program as "marking a sense of urgency for the American troops."⁶⁵

Henry Kissinger testified in a Senate hearing regarding UN sanctions and long term U.S. interests within the region: "By the time it is evident that sanctions alone cannot succeed, a credible military option will probably no longer exist."⁶⁶ The remark focused upon two facts. First, the economic sanctions were taking a heavy toll on the civilian population of Iraq and surrounding countries. Saddam Hussein remained unaffected and indifferent to his country's suffering. The priority for food and material goods was given to the military. The implications of supplying and maintaining the military indicated he was planning to use it. Second and more ominous was the fact that Iraqi nuclear weapons possibly could turn the crisis into a standoff. The overriding concern was to maintain stability in the region and not reward Iraq for its aggression. Giving Iraq additional time to complete production of its nuclear weapons program would hinder regional stability. Iraq had to be removed from Kuwait prior to its

⁶⁵ Cited in *Ibid.*, p. 326.

⁶⁶ Cited in *Ibid.*, p. 327.

obtaining a nuclear weapons capability. The time for unchallenged U.S. military superiority and ineffective UN sanctions was running out.

The United States could not afford a credible challenge to its nuclear deterrence policies. The Russians were skeptical of UN-governed military action. They were not entirely convinced that the United States would leave the region following the conclusion of the Gulf War. Nuclear confrontation would have escalated the conflict beyond any acceptable terms for the Russians and most likely would have driven them from the coalition. Two major factors appear to have driven the military timeline. First, avoidance of credible challenges to U.S. nuclear deterrence. Perceived vacillation might create security dilemmas in both the immediate and extended deterrence policies. Secondly, the use of nuclear weapons would legitimize all forms of WMD.

B. CONCLUSION

Diplomatic pressure and economic sanctions imposed by the UN failed to bring about Iraqi compliance. As hopes for a political solution dwindled, U.S. military leaders focused on Iraqi WMD and future security ramifications for the region. Given Iraq's historical use of CBW, the Pentagon's perception of Iraqi action favored CBW use. Iraq had used CBW defensively in the past against Iran and the Kurds. While Iraq exhibited some offensive capabilities late in the conflict with Iran, CBW was seen as a weapon of last resort.⁶⁷ In the face of overwhelming odds against the coalition forces, Iraq would surely be tempted to use its trump card. Further complicating the scenario was the

⁶⁷ McCarthy and Tucker, "Saddam's Strategic Arsenal," p. 21.

suspected attempt by Iraq to bring Israel into the conflict, thereby effectively breaking up the fragile coalition of forces.

When dealing with the aggressive and determined regime of Iraq, every policy option has counteractive effects. There is a certain opportunity cost in opting for short-term security with the imposition of economic sanctions. There is the added cost of human suffering. Conversely, transitioning from a political to a forceful military solution also created obstacles for future U.S. policy. The dynamics of the Gulf region do not afford the United States with many chances to forge lasting relationships.

Avoiding the appearance of Western hegemony appears to be the underlying theme of a carefully worded letter from President Bush to Saddam Hussein. Secretary of State James Baker delivered it to the Iraqi Foreign Minister, Tariq Aziz, on 9 January 1991. While the letter was not antagonistic, Aziz told Baker that it “was full of threats.” The letter avoided the direct nuclear retaliation threat for Iraqi CBW use, but promised that “The American people would demand the strongest possible response. You and your country will pay a terrible price if you order unconscionable acts of this sort.”⁶⁸

The United States and its allies can influence policies within the region only so far. Countering aggression within the region was a double-edged sword for U.S. policy. It had to be sufficient to secure national interests yet stop short of the perception of superpower hegemony.

⁶⁸ Steve A. Yetiv, *The Persian Gulf Crisis* (Westport: Greenwood Press, 1992), p. 179.

IV. WHY IRAQ DID NOT USE WMD DURING THE GULF WAR

A. INTRODUCTION

This chapter examines why Iraq did not carry out its threat to use CBW. Iraq had dedicated vast resources and capital toward CBW procurement. With this fervent commitment to both nuclear and non-nuclear WMD, why was it not used in 1991? The Iraqi government has not released any official statement regarding this issue. Therefore, Iraqi conduct during the Gulf War might be interpreted in many ways. This chapter discusses some of the plausible, alternative explanations for Iraq's non-use of CBW. These explanations contrast with the widely accepted assumption that the threat of a U.S. nuclear strike alone deterred Iraqi WMD. However, that possibility should not be discounted. Rather, the possibility of a nuclear strike in combination with the alternative explanations presented here contributed to non-use of Iraqi CBW.

B. IRAQI INCENTIVES TO DEVELOP AND USE CBW

1. Requirements of an Effective CBW Arsenal

The requirements for chemical weapon design are considerable. However, CBW is the logical choice for Iraq or any other developing country seeking WMD capability. The effectiveness of the NPT regime, prohibitive costs, and monumental technological expertise place nuclear weapons well out of reach for most developing nations.

a. Structure

The primary concern of any CBW weapon is its physical structure. First generation weapons are referred to as "unitary weapons." That is, the munition is composed of a single agent compound. This creates a handling and transport

impediments as well as a daunting task for maintenance and storage. Second generation chemical arsenals consist of “binary” munitions. The chemical compounds are in two canisters within the warhead. Each chemical is relatively harmless in itself. After the munition is launched, the canisters are allowed to mix creating the designated agent. . Physical stability is important not only for handling and transport purposes but the warhead must also be capable of withstanding the actual firing of the munition.⁶⁹

b. Toxicity

The toxicity levels of the weapon must be sufficient to render the necessary effects. World War one is earmarked by several employments of chemical weapons whose toxicity was less than effective. In many cases, the onset of effects did not occur until hours after the gas was delivered. While this might have had some psychological effect on the soldiers, it had little value as a chemical weapon employment.⁷⁰

c. Concentration

The next requirement is an obvious one. The chemical agent must be delivered to the target in sufficient concentration to achieve the desired effect. Delivering concentrations of highly volatile agents is counterproductive. Closely related to the concentration level is persistency.⁷¹

⁶⁹ Valerie Adams, *Chemical Warfare, Chemical Disarmament* (Bloomington: Indiana University Press, 1990), pp. 7-8.

⁷⁰ Ibid.

⁷¹ Ibid.

d. Persistency

Persistency factors into the military planners considerations for employment as well. Persistency dictates the manner in which a chemical agent is used. Effectiveness is closely related to persistency because of the environmental conditions. The chemical agent might be delivered with sufficient concentration but be quickly dissipated by wind or rain. The ideal chemical agents will persist long enough, in ambient conditions, for the designed purpose.⁷²

e. Durability

Lastly, the chemical agents must be able to withstand changes in temperature. The corrosive nature cannot be such that the projectile casings will have to be replaced in short duration. Most importantly, the selected agent must be suitable for large-scale production to ensure availability.⁷³

C. FORMIDABLE CHARACTERISTICS OF BW

The biological agent is far less predictable than the chemical agent. This is mainly due to the requirement that the disease spread quickly and effectively. Ideally, the agent should infect the target population with a disease that has no readily available cure. Furthermore, the factor of concentration plays an important part in the employment. Unlike chemical weapons, where effects occur at less than required concentrations, insufficient concentrations of BW agents might not be enough to create the disease intended. Environmental conditions are also a concern when considering concentrations. Many pathogens are killed by merely exposing them to sunlight, fresh

⁷² Ibid.

⁷³ Ibid.

air, or abnormal temperatures. The heat generated when a munition is fired is enough to destroy many biological agents. Biological agents do not need to be fired out of the barrel of an artillery weapon. There are several non-explosive methods to release these agents.

The requirements for BW agents are not as easy to quantify. Measuring the lethality of the various BW agents is difficult and uncertain. Primarily, the difficulty arises in discerning from natural outbreaks versus BW employment. The nature of the BW is inherently less stable than the chemical counterpart. Because the BW is not a specified mixture of chemical agents, it is susceptible to variation. This variation leads to differing levels of persistency and effectiveness. To a certain degree the ability of the population to resist the BW agent also impacts the measured effectiveness.⁷⁴

D. TACTICAL ADVANTAGES

There are several tactical advantages to CBW. The nature of this type of warfare gives the user the advantage because if implemented properly, it is a force multiplier. As in any battle, the element of surprise wreaks havoc upon the enemy. The ancient military strategist, Sun Tzu, believed that surprise was a practical option which should be on the military leader's mind at all times. There are three ways to achieve surprise when using CBW: employment, innovation and speed. First, introducing and using CBW when the enemy does not expect it; as in the case of the Iran-Iraq War, dramatically favors the aggressor. Second, if new and unknown agents are used, they can defeat CBW defensive

⁷⁴ Ibid.

measures in place. Finally, the technique of delivery and time period of employment can overcome the enemy's ability to compensate and counterattack.⁷⁵

Another tactical advantage of CBW is the area that is affected. If the wind conditions are favorable, chemical agents will affect a far wider area than most conventional explosives. Rapid reduction of enemy forces certainly contributes to the surprise. This fact is substantiated by the data presented in Table 4.1.⁷⁶

Table 4.1 Comparison Of Chemical / Conventional Multi-Barrel Launcher Attacks

Target (9 hectare area)	Chemical		Conventional	
	rockets used	% casualties	rockets used	% casualties
Platoon w/out overhead cover	240	66	162	55
Platoon with overhead cover	240	53	4860	55
Artillery battery	240	52	900	55

An approximate comparison between the number of conventional (high explosive) and chemical rockets launched from multi-barrel launchers to achieve a level of casualties of about 50 - 60 per cent, using 6 multi-barrel rocket launchers, with observed fire in neutral wind speed conditions of three meters per second.

The duration and efficiency of the attacks contribute greatly to tactical advantage. It is true that volatile chemical agents may be driven in an undesired path due to winds, yet ground contamination agents prove to be more effective. They remain restricted to

⁷⁵ Herman Ochsner, *History of German Chemical Warfare in World War II, Pt. 1* (Washington D.C.: Office Chief of Chemical Corps, 1949), p. 2.

⁷⁶ Edward M. Spiers, *Chemical and Biological Weapons: A Study of Proliferation* (New York: St. Martin's Press, 1994), p. 159.

the area where they were applied. Moreover, chemical agents will tend to reach locations that conventional weapons cannot. Dead spaces, deep trenches, fortified terrain positions which normally require a disproportionate expenditure of ammunition are now targets of opportunity.

Serious effects on the combat efficiency and morale of the troops result from the execution of CBW. Fatigue sets in from the extra, protective clothing. The soldier's resolve is tested. Proper meals are no longer possible. The anxiety level goes up creating new opportunities for mistakes. The entire focus for the individual on the battlefield has now changed.

Policy makers are very aware of the psychological factor imposed by CBW. The chairman of the House Armed Services Committee, Les Aspin, made this statement in September 1990 concerning BW:

Saddam Hussein...is expected to have a militarily significant biological program by the end of this year or early next year. This will be a new dimension to the problem. It is a more important and more serious element than the chemical threat. It is harder to deal with.⁷⁷

E. TACTICAL DISADVANTAGES

As quickly as CBW can be a force multiplier, it can become a force detractor. CBW does not discriminate between friendly and enemy forces. The effects of wind, weather and season must be accounted for prior to CBW employment. A follow-on consideration for the advancing troops after CBW is the contamination of a persistent agent.⁷⁸ Like the physical stresses of the enemy, the protective measures require

⁷⁷ *CNN: War in the Gulf* (Atlanta: Turner Publishing Co., 1991), p. 49.

⁷⁸ *Ibid.*, p. 3.

diligence and discipline. If the training and practice cycles were not conducted properly, the risk to friendly forces is the same as it is for the enemy forces.

F. REASONS FOR ADOPTING A CBW POLICY

For some messianic fundamentalists in the Middle East, Mutual Assured Destruction is not a deterrent but a temptation.

*-The New York Times*⁷⁹

There are several crucial aspects to adopting a CBW program. Central to the understanding is the acknowledgment that these weapons are more genocidal than political. They appeal to Ba'athist ideology in which fierce emotions, ethnic rivalries, and deep seated religious intolerance combined with the self-proclaimed effects of martyrdom prevail. The power of secular politics comes second in Iraqi society. The doctrine that shaped the Cold War, Mutual Assured Destruction, appeals less to Iraq. Instead, "Mutual Assured Annihilation" seems to be preferable.⁸⁰ National self determination, economic independence, competition for non-renewable resources like oil and minerals, and overpopulation all contribute to the global tensions. The aforementioned pressures are likely to make non-nuclear WMD attractive alternatives for coercion and substantial bargaining.

CBW has often been referred to as the "poor man's atomic bomb." While it might not give a country superpower status, it certainly commands the attention of the superpower(s). It is available at a fraction of the cost of a nuclear arsenal. CBW technology is also less complicated than nuclear technology and that much easier to

⁷⁹ Cited in William E. Burrows and Robert Windrem, *Critical Mass: The Dangerous Race for Superweapons in a Fragmenting World* (New York: Simon & Schuster, 1994), p. 120.

⁸⁰ *Ibid.*, p. 19.

conceal. Mere possession creates a deterrent capability that must be considered thoughtfully. The Gulf War is a prime example of this. While no deliberate employment of chemical weapons took place, the potential existed. It is very doubtful that Iraq did not notice the amount of attention given to its CBW arsenal. In fact, testimony given before congress by General Norman Schwarzkopf essentially legitimized Iraq's CBW arsenal in the mind of Hussein. While trying to convey the level of threat to Congress, General Schwarzkopf most certainly motivated Hussein to expand WMD procurement:

...one of my biggest concerns from the outset was the psychological impact of the initial use of chemical weapons on the troops. If they fight through it, then it is no longer ever going to be a problem. But if it stops them dead in their tracks and scares them to death, that is a continuing problem. And that was one of the concerns we had all along.⁸¹

This statement, from the most powerful military commander in the world, justifies WMD acquisition in the mind of Saddam Hussein.

The next example, Figure 4.2, illustrates CBW as an effective psychological weapon of terror.⁸²

⁸¹ Cited in Spiers, *Chemical and Biological Weapons*, p. 117.

⁸² International Institute for Strategic Studies (IISS), *Military Balance 1988-89* (London: IISS, 1989), p. 248.

Figure 4.2 A Scud Missile Attack

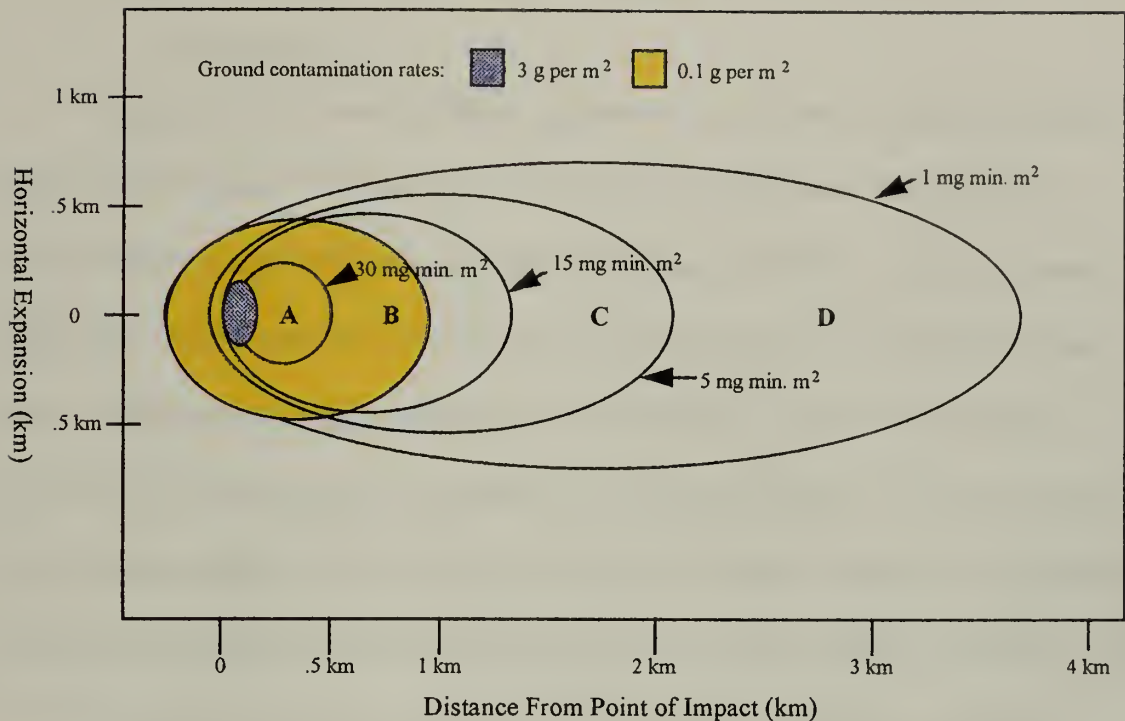


Figure 4.2 depicts the following conditions: One missile fired (CEP-900m); wind speed 5m/sec; neutral atmospheric conditions. The most likely casualty effects if a nerve agent, i.e., Soman or similar, were used would be: Area A - many dead; Area B - some dead, many ill; Area C - many moderately ill; Area D - mild effects.

Had Hussein fired Scud missiles, with CBW warheads, into Israeli cities, the damage would have been immense. During the Gulf War, Hussein adequately demonstrated his willingness and capability to fire Scud missiles, armed with conventional warheads into Israel. Hussein's decision to do so also underscored the exposed position of any state to a long-range missile attack in the Middle East. This comes as no surprise to the leadership of Iraq. And it is for this reason that Iraq continues aggressively to seek advanced CBW capabilities.

G. POSSIBLE EXPLANATIONS FOR THE LACK OF IRAQI CBW

1. Introduction

Together with the reasons mentioned earlier in the chapter, Iraq feels justified in maintaining a strategic CBW arsenal. The following presuppositions are based on observed behavioral patterns and statements of the Iraqi leadership. The explanations offered are the most plausible, given the political and geographical disposition of Iraq. There exists no official Iraqi explanation as to the necessity of the WMD programs. Furthermore, the role of the CBW appears to fit a defensive posture. This fact calls into question the explanation for lack of Iraqi initiated CBW attacks. Given past Iraqi *modus operandi*, faced with overwhelming coalition forces, Iraq should have used WMD. It did not. The explanation might lie with one or more, in combination, of the following factors.

2. Past Operational Effectiveness

Iraqi CBW attacks against Iran and the Kurds were made purely from a defensive posture. Neither employment was a “gas and go” operation. Inexperience and the lack of a robust capability appear to fuel the reluctance towards offensive operations. Iraq experimented in the final stages of the Iran-Iraq war with attempts to shorten the period between weapon employment and troop occupation. Iraqi troops still have not demonstrated a willingness or capability to operate within a chemically active range.

The likelihood that Iraq would change doctrinally from defensive posture CBW to offensive posture CBW in less than three years is highly unlikely. Iraqi research and development programs concentrated on improving and expanding the CBW arsenal.

Aside from the asymmetrical use of CBW on Iran and the Kurds, Iraq's doctrine closely paralleled that of the Soviet Union. That doctrine called for the offensive employment of CBW with nuclear weapons. The lack of nuclear weapons left Iraq to rely upon its newly developed and untested arsenal. Iraqi risk assessment most likely found that the risks far outweighed the benefits. Very little data could be found on effective Iraqi countermeasures for CBW.

In the war with Iran, Iraqi aircraft and artillery were the primary delivery vehicles for CW. Total coalition air supremacy precluded any Iraqi flight operations. Much of the Iraqi artillery batteries were decimated by the air campaign and the surviving guns were overrun by ground forces

3. Strategic Deterrence of Israeli WMD

Saddam Hussein and others within the government see Israel as the enemy of the Arab world. The long-standing dispute between Israel and Iraq fuels the WMD deterrence requirements for both countries. Each country fears the other's WMD. It is also interesting to note that neither country professes a first-use policy toward the other.

Again, the CBW arsenal appears to take on a defensive role. Evidence points to the deterrence posture exhibited in the "Thunderstrike" option. Iraq's national security and intelligence programs reevaluated regional threats following the cessation of the Iran-Iraq war. It was decided that Israel was the greatest threat.⁸³ There were two avenues of approach to dealing with Israel. First, the Iraqis wanted to deter the Israeli

⁸³ McCarthy and Tucker, "Saddam's Strategic Arsenal," p. 18.

WMD arsenal. Second, it wanted to protect its territory from another conventional, preemptive strike.

Ironically, the possibility of another preemptive raid might have driven the arsenal underground. The BW program, compared to the CW program, is in its infancy. As such, Iraq has not had the opportunity to extensively field test the BW weapons. Wide variations of concentration and persistency of BW inject too many inconsistencies into the battlefield equation. These shortcomings are due partly to the requirements of secrecy and also the relatively new production technology.

4. Regional Ambitions

Saddam Hussein exhibits unbridled self-adulation and a diminutive political acumen. Nevertheless, he aspires to be the leader of the pan-Arab movement and kick the infidels out of the region. To do this, he must possess two things: the military strength and the loyalty of the other countries in the region. Hussein feels that CBW will be both a political and military weapon to serve his personal aspirations. With the other Arab nations standing against Iraq in the Gulf War, the decision not to use WMD seems to have worked in Iraq's favor. In Hussein's mind, he still sees himself as the leader of the Arab world. This goal would have been exceedingly difficult to achieve if he had used WMD against other Arabs in the coalition. Secondly, by not using the WMD arsenal, he further advances the perception that Iraq was a victim of Western antagonistic policies.

5. Command and Control Problems

Conflicting reports have surfaced as to whether or not CBW was ever employed in the field. According to Anthony Cordesman, Iraq weaponized three biological agents for use in the Gulf War. The weaponization consisted of: 100 bombs and 15 missile warheads loaded with Botulinum; 50 R-400 bombs and 15 missile warheads loaded with anthrax; and 16 missile warheads loaded with Aflatoxin.⁸⁴ There is no strong evidence to suggest these weapons were on the battlefield. Even so, had the warheads been in the field, the Iraqi communications infrastructure had been eliminated early on. Hussein had no way to communicate the order to launch. Even if he had given the order it is impossible that every commander disobeyed the command. These facts point to only two answers: (1) the warheads were never deployed; or (2) the order was never given.

6. Logistical Shortcomings

Based upon the Iran-Iraq War and use against the Kurds, CBW was a weapon of last resort. Weapons of this nature are generally not on the forward edge of the battle area. Rather, they are held in reserve in the rear. Coalition air attacks destroyed all logistic capabilities of the Iraqi army. They simply had no way to get the weapons onto the battle field. Additionally, evidence from the last section points strongly to no CBW deployment.

7. Unacceptable Performance of CBW Munitions

Iraq's purification process, particularly for the nerve agents, lacked the necessary sophistication. UNSCOM investigations showed Iraq's mustard gas agent was about 80

⁸⁴ Cordesman and Hashim, *Iraq: Sanctions and Beyond*, p. 300.

percent pure. Two Iraqi nerve agents, Tabun and Sarin, were only 60 percent pure and had an extremely short shelf life.⁸⁵ It is entirely possible that the weapons were not used because they would not have achieved their desired effect. An effective deterrent either (a) causes deterrence by denial or (b) deterrence by punishment. Expecting the Iraqi CBW arsenal to do either effectively is highly implausible given these figures. It is also quite probable that Iraq might have filled the munitions prematurely anticipating earlier coalition action.

H. CONCLUSION

Iraq may have feared nuclear retaliation or massive escalation leading to coalition occupation. A declassified CIA document confirms this premise. In addition, it lists a number of other factors that constrained Baghdad's use of CW. The weather conditions never favored CW. Rain accompanied with high winds blowing to the north onto Iraqi units would have greatly reduced the effectiveness of chemical weapons. The document also suggests that the battle developed so rapidly that it was impossible for Iraq to effectively target coalition units.⁸⁶ This concurs the logistical failures cited earlier.

Six years after the conclusion of the Gulf War, there is still considerable uncertainty as to why Iraq refrained from using its CBW arsenal. The answer might lie with several of the preceding arguments or some unexplained cause. The Iraqis have not issued any reason nor are they likely to. Though Hussein claims to have decentralized command over CBW warheads and given authority to tactical commanders, Iraq used no

⁸⁵ Ibid., p. 316.

⁸⁶ CIA, *Why WMD Were Withheld*, <http://www.gulflink.osd.mil/>. File: 071596_cia_75701_75701_01.txt.

such weapons. Evidence suggests that this claim was false. The CBW equipped munitions were never deployed south into the Kuwaiti theater.⁸⁷

⁸⁷ Ibid., p. 315.

V. IRAQI WMD EFFORTS AFTER DESERT STORM AND IMPLICATIONS FOR U.S. DEFENSE POLICY

It is fatal to enter any war without the will to win it.
Gen. Douglas MacArthur (1952)⁸⁸

A. INTRODUCTION

At the time of this writing, Iraq stands in defiance of the UN and the UNSCOM inspection teams. This maneuvering by Hussein is another effort in a long pattern of predictable behavior. Given the past efforts to acquire WMD, it is extremely unlikely that Iraq will fully comply with any UN disarmament resolution. Iraq continues to apply itself to developing and maintaining a formidable WMD stockpile. Secret storage facilities and production efforts remain hidden from UNSCOM teams. The domination of coalition forces over Iraq provided temporary relief from regional stability. Within a short period of time, Iraq has started to rebuild militarily. Present-day defiance of the UN is a grim reminder of pre-Gulf War Iraqi behavior. Undivided attention must be placed upon Iraq and its regional aspirations. It is essential for future U.S. policy concerning Iraq to maintain the security of the region and U.S. national interests without giving the impression of superpower hegemony.

Substantial implications to U.S. defense policy occur in four areas: (1) eliminating current stockpiles of WMD; (2) emerging WMD missile technology; (3) future chemical weapons capabilities; (4) future biological weapons capabilities; and (5) Iraq's role in supporting terrorism.

⁸⁸ Cited in *Merriam-Webster Dictionary of Quotations* (Springfield: Merriam-Webster, 1993), CD-ROM.

B. FUTURE WMD CAPABILITIES

1. Introduction

Iraqi WMD continues to be a reality the United States must deal with.

Elimination of substantial stockpiles occurred during the Gulf War. Subsequently the UN Security Council Resolution 687 continues the elimination via UNSCOM inspections. While the tangible weapons may be taken away, the process still does not relieve the potential threat. It is unrealistic to think otherwise. What the Gulf War did not do and UNSCOM cannot do is eradicate the knowledge base and technicians from Iraq. As long as the scientific community is there and a determined political will drives the issues, Iraq will possess WMD.

2. Current Stockpiles Of Weapons

On 3 April 1991, the UN Security Council passed resolution 687. The resolution called for, among other things, the complete destruction, removal or dismantling of all chemical, biological, and nuclear weapons. The resolution also includes all research, development, storage, production, and repair facilities, and ballistic missiles exceeding 150 kilometers. The resolution linked Iraqi compliance to economic incentives such as oil exports. Recently, there was a stand-off between Iraq and UN officials over the composition of the UNSCOM teams. The major objection, besides the inspections, was the personnel composition of the teams. Iraq is refusing to allow any American inspector in the country.

This resistance is not new. From the beginning, as early as 5 April 1991, Iraq has been resisting UN and UNSCOM inspections. Iraqi forces were documented salvaging equipment of missiles, WMD and cleaning up suspect weapon sites.⁸⁹

Revelations by a defector and former head of Iraq's WMD program, Hussein Kamel Majid, disclosed the deliberate and systematic plan to deceive UNSCOM inspectors. This defection occurred on 7 August 1995. This proved that Iraqi officials never had any intention of complying with the UN resolution. Iraq will never be completely forthright concerning its WMD programs. It also implies that there are several gaps in the nonproliferation regimes and the UNSCOM inspection process.

3. Emerging WMD Missile Technology

During the Gulf War, Iraq fired a total of 88 long range missiles.⁹⁰ The missiles were a product of a development period begun during the Iran-Iraq War. During the mid-1980s, a concerted effort to increase the missile stockpiles led to indigenous production capabilities. At the time of the Gulf War, Iraq was said to have had at least 11 missile programs either deployed or in development. Chemical and biological warheads had already been developed and work had begun on a nuclear warhead.⁹¹

The continued proliferation of missile-related technology by French, German, Central European, and Russian firms hinders current UN efforts. U.S. intelligence analysts also believe Iraq is hiding large numbers of Scud missiles and associated equipment.

⁸⁹ Cordesman and Hashim, *Iraq: Sanctions and Beyond*, p. 291.

⁹⁰ *Ibid.*, p. 306.

⁹¹ *Ibid.*, p. 307.

4. Future Chemical Weapon Capabilities

Iraq pursued a nuclear weapons program in the late eighties and early nineties. However, the Israeli preventive strike eliminated its nuclear facility and most of the technology. Unable to recover this lost nuclear capability, Iraq chose to compensate with non-nuclear WMD.

Unlike nuclear technology, chemical and biological weapon technology does not require international transfers, thus many nonproliferation safeguards can be circumvented. The choice to pursue CBW was based on several factors: cost, availability, and past battlefield experience. Up front, the relatively inexpensive cost of capital and production time made CBW the likely WMD candidate. Next, many chemical and biological precursors were readily available. Dual-use technology affords accessibility to many of the required materials and production processes. In addition, four years prior to the destruction of their nuclear facility, they engaged in chemical warfare against the neighboring country of Iran. Chemical weapons also were used within the borders of Iraq against the Kurdish people in 1988. It is important to note that the international community did not raise much of a protest over these uses of chemical weapons. Rather, Iraq seemed to operate with impunity while the global community looked on with indifference. The lack of any international condemnation served as silent vindication for Iraqi actions. Ten years later, many of those apathetic spectators would have to find a way to confront those capabilities.

At the time of the Gulf War, the allied coalition would face an improved chemical weapons program and a biological weapons capability as well. Saddam Hussein, is

relentless in his pursuit of regional dominance. The WMD programs are at the forefront of Iraq's defense industry. The goal of middle eastern dominance, so far, has not been achieved. Temporarily set back by the Gulf War and ensuing United Nations sanctions, Iraq is not dissuaded in the least. Efforts continue despite UNSCOM inspections. Based on Iraq's past behavior, future capabilities and intentions will plague U.S. policy makers.

Iraq's indigenous capability to produce chemical weapons began in 1974. Additionally, Iraq maintains several underground storage facilities dispersed throughout the country. Present day chemical weapons primarily include mustard-type blister agents and the nerve agents, sarin, cyclosarin, VX and tabun. The nerve agents are extremely lethal in small doses.

From the inception of the CBW program up to the Gulf War, Iraq made tremendous strides in its developmental capabilities. Iraq has developed a highly refined mustard gas in liquid form with a long shelf-life. Unconventional means of CBW dissemination have also been pursued. Several avenues of evidence suggest that Iraq has since developed a process to turn the liquid mustard gas into a dry form that is later mixed with a talcum-like powder substance. Referred to as "dusty mustard," the chemical agent adheres to the powder medium and can then be dispersed via a respiring aerosol. This technique exponentially increases the inhalation toxicity.⁹² The Defense Intelligence Agency has published a declassified intelligence report on "dusty mustard," citing: "The agent dusty mustard, and dusty agents in general, are disseminated in a dry aerosol and may be difficult to detect. The aerosol filter in a protective-mask canister

⁹² U. S. Army, Field Manual 3-3: *Chemical and Biological Contamination Avoidance*, p. 3-1.

will stop a dusty agent and protect the wearer, but unless the agent can be readily detected, the potential victim is unlikely to be masked.”⁹³

Robert Gates, a former Director of Central Intelligence, testified before Congress on Iraqi efforts to lie and conceal its CBW program. In early 1992, he stated, “Iraq’s “hard to get production equipment” for chemical weapons had been dispersed and “hidden” prior to allied bombing attacks. He also stated that “if sanctions are relaxed, we believe Iraq could produce modest quantities of chemical agents almost immediately, but it would take a year or more to recover the chemical weapons capability it previously enjoyed.”⁹⁴

UNSCOM has obtained more recent information that Iraq is still importing chemical precursors under the guise of pharmaceutical supplies.⁹⁵ On 19 November 1997, Senior Pentagon intelligence analysts stated that if the current standoff with Iraq continued much longer, Iraq would be able to produce chemical agents in a matter of days. Its ability to weaponize the agent would be a matter of weeks.⁹⁶

5. Future Biological Weapon Capabilities

The UN is now actively engaged in trying to ascertain the extent and capabilities of the Iraqi biological weapons program. It is now known that Iraq was fully prepared to use BW against Iran had the war continued. Largely overshadowed by CW, the BW

⁹³ Defense Intelligence Agency, “Iraq : Chemical and Biological Capabilities as of August 1990,” 21 August 1990, GulfLINK document no. 73876681.

⁹⁴ Cordesman and Hashim, *Iraq: Sanctions and Beyond*, p. 317.

⁹⁵ Ibid.

⁹⁶ CNN news broadcast, 19 November 1997. Special report on Iraqi refusal to comply with UN Security Council Resolution 687 requiring UNSCOM teams to inspect for WMD.

programs did not receive the same attention from UNSCOM until they were alerted in September 1995.⁹⁷

Initially denying any knowledge of a BW program, Iraq reluctantly admitted having one when confronted with evidence provided by the defector Hussein Kamel. The same uncertainties of the CW program apply to the BW program. Iraqi intent is to deliberately mislead UN inspectors. The Iraqi government claims to have destroyed all of its BW capability in May-June 1991. Yet it can offer no evidence, either a date or a site, where this alleged destruction took place. Information obtained from Kamel confirmed that this, too, was a complete and total fabrication.

As it turns out, Iraq had an extensive biological arsenal ready to use against the allied coalition in 1991. Iraq had 90,000 liters of botulinium toxin and 8,300 liters of Anthrax. Both had been weaponized on Scud warheads and aerial bombs. Additionally, research into infectious agents and Mycotoxins had taken place. This production took place at Al Hakam and was completely dispersed prior to the beginning of hostilities in 1991.⁹⁸

The following example demonstrates Iraq's continued commitment to possessing WMD. The Secretary of Defense's publication *Proliferation: Threat and Response* November 1997, states:

The depth and breadth of Iraq's previous chemical warfare efforts, the rebuilding of key facilities since 1991, and the consistent pattern of trying to deceive UNSCOM about the scope of its previous efforts and remaining capabilities clearly indicate Iraq's intent to rebuild this capacity, should it be given the opportunity.

⁹⁷ Cordesman and Hashim, *Iraq: Sanctions and Beyond*, p. 318.

⁹⁸ Office of the Secretary of Defense, *Proliferation Threat and Response*, April 1996 (Washington D.C.: U.S. Government Printing Office), pp. 17-24.

Iraq has rebuilt key portions of its chemical production infrastructure for industrial and commercial use. The facilities are currently subject to UN scrutiny, but they could be converted fairly quickly, allowing Iraq to restart limited agent production. Even though some foreign assistance for equipment and material would be required for all but a minimum effort, Iraq would need several months to produce a usable stockpile of agents and several years to return to pre-Gulf stockpile levels.⁹⁹

C. CONCLUSIONS AND RECOMMENDATIONS

If Iraq decides to act aggressively and threaten the region with CBW, the United States may opt to threaten nuclear retaliation. This decision leaves the policy makers with only two options. If the threat is challenged, the United States must deliver as threatened or back down. Neither of the resulting outcomes gain favor with the international community. Using a nuclear weapon goes against the nonproliferation regimes and could legitimize the use of nuclear, chemical and biological weapons in the eyes of other countries.

The 1997 National Security Strategy, states that the current Administration supports the international treaty regimes that prohibit the acquisition of WMD. These regimes include the NPT, the CWC, and the BWC. Possible future U.S. deterrence policy regarding Iraqi WMD clashes with this ideology. How can the United States threaten a non-nuclear nation with nuclear weapons and at the same time tell developing countries not to invest in nuclear, chemical or biological weapons? It cannot. Political hypocrisy erodes credibility and creates distrust. Hence, future deterrence policy regarding Iraq's non-nuclear WMD must operate within the confines of the

⁹⁹ OSD, *Proliferation: Threat and Response November 1997*, <http://www.defenselink.mil/Iraq/>.

nonproliferation regime guidelines. To avoid legitimization of WMD, asymmetrical conventional military response is the appropriate course of action.

Strategists and policy makers must expect Iraqi non-compliance and aggression. As long as Saddam Hussein is in power, the determination to dominate the region will prevail. Iraq currently does not comply fully with the UN sanctions and it violates the UN no-fly zones. Iraq continues to position itself to resume its military buildup the instant the sanctions are lifted.

U.S. policy makers must be poised for any number of contingencies arising in Iraq. While Iraq is weaker militarily, as compared to 1991, it still has many conflict options available. Some of the possible regional contingencies the U.S. must be prepared to deal with include:

- War with the Kurds in the Kurdish security zone.
- Major clashes resulting from refusal to allow UN inspections to take place.
- Chemical or biological terrorism.
- Clashes with Turkey or Iran over efforts to attack Kurds.

Someday, the UN sanctions will end and Iraq will be able to rebuild its forces. It will do so with newly acquired technology and with the lessons learned from the Gulf War. Future military conflict with Iraq is a contingency U.S. policy makers cannot overlook.

To effectively achieve the goals of the nonproliferation regimes and maintain a credible deterrent, the application of asymmetrical conventional force is necessary. In the case of Iraq, additional measures must be taken. Deterrence theory works when it is applied carefully and the adversary believes the threat is credible. The perception of a

credible threat is a value judgment by the adversary of the opponent's capabilities and intentions.

Threatening Iraq with economic sanctions does nothing to deter Saddam Hussein. The economic sanctions are going on six years now and he still has not complied with the demands of the UN Security Council. He feels nothing for his people. He is not a leader. General Norman Schwarzkopf held a press conference on 27 February 1991. He was asked by a reporter to give his impression of Saddam Hussein as a military strategist.

As far as Saddam Hussein being a great military strategist, he is neither a strategist nor is he schooled in the operational art, nor is he a tactician, nor is he a general, nor is he a soldier. Other than that, he's a great military man. I want you to know that.¹⁰⁰

The one thing he and his regime care about is their survival. Should Iraq threaten regional instability with WMD, Saddam Hussein and the entire regime must be targeted and terminated.

No matter how successful the various nonproliferation regimes are, there will be gaps. One of the biggest obstacles facing the regimes is the concept of dual use. Many countries seeking WMD use this ruse to obtain precursors. Similarly, countries acting as proliferators are eager to realize the financial benefit of such sales.

Finally, nuclear weapons are not the proper choice to deter non-nuclear WMD. Conventional asymmetrical force is more than sufficient to target and eliminate

¹⁰⁰ Cited in Summers, *A Critical Analysis of the Gulf War*, p. 285.

aggressors. America must become the leader in the international community through example and not through legitimizing its own WMD, while denying WMD to others.

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